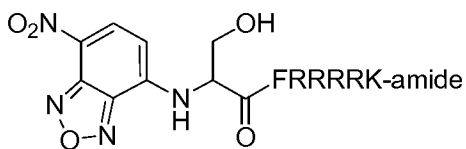


Amendments to the Claims:

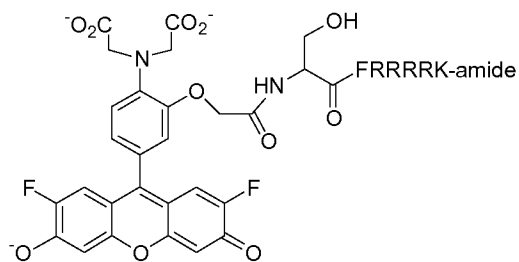
Please cancel Claims 82 and 94 without prejudice or disclaimer; amend Claims 49, 56-62, 71, 73-80, 83-84, 86, 88-89, 98, 122 and 148; and add new Claims 151-154 as set forth below.

1-48. (Canceled)

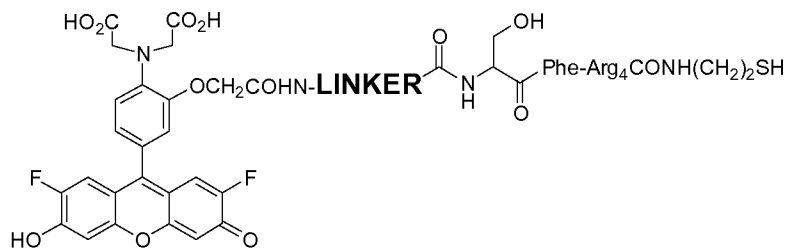
49. (Currently amended) A substrate for a protein kinase, wherein the substrate is selected from the group consisting of:



(SEQ ID NO:3),

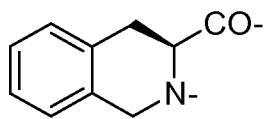
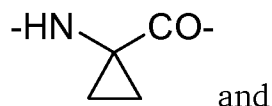


(SEQ ID NO:3), and



(SEQ ID NO:1);

wherein F is phenylalanine, K is lysine, and R is arginine; and wherein the LINKER is selected from the group consisting of N-methyl glycine, L-proline, D-proline,



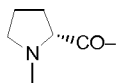
50-55. (Canceled)

56. (Currently amended) A substrate for a protein kinase or a precursor of the substrate, wherein the substrate or the precursor comprises:

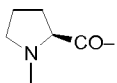
a peptide substrate for the protein kinase, wherein the peptide comprises a serine, a threonine, or a tyrosine on a terminal end of the peptide;

at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide;

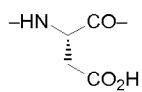
wherein ~~the fluorophore is attached directly to the peptide or~~ the fluorophore is attached to the peptide by a linker selected from the group consisting of



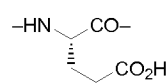
a



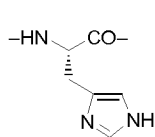
b



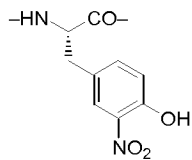
c



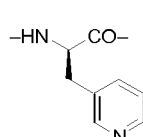
d



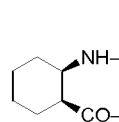
e



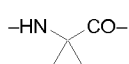
f



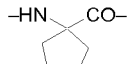
g



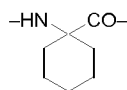
h



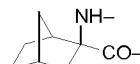
i



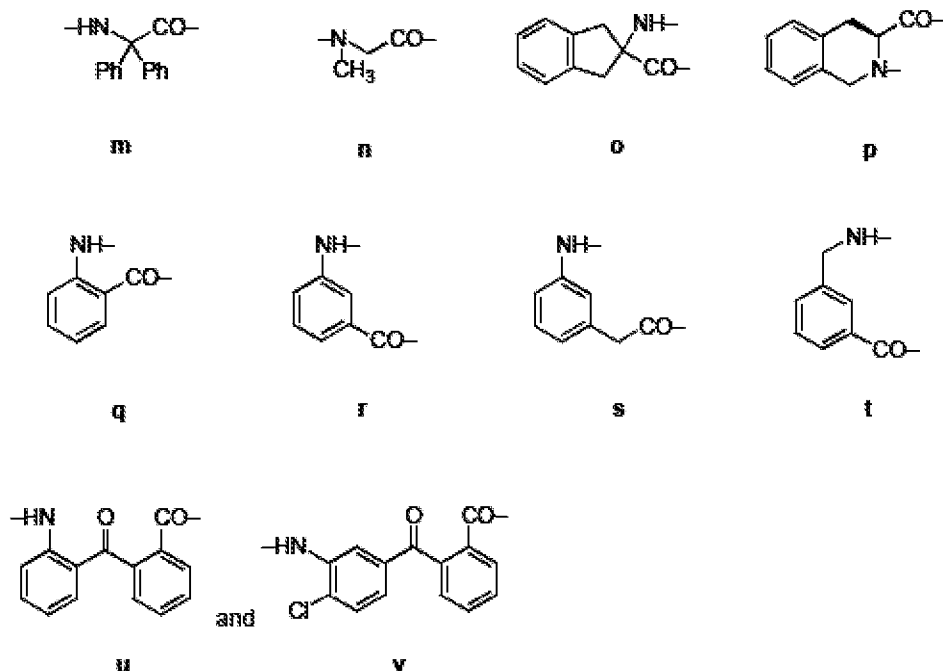
j



k



l

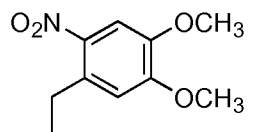


; and

wherein

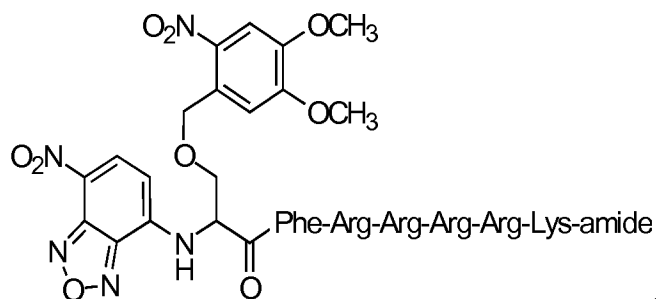
- (i) the substrate is specific for a protein kinase subtype,
- (ii) the fluorophore is attached to the C-terminal end of the peptide,
- (iii) a fluorophore is attached to each terminal end of the peptide,
- (iv) a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide,
- (v) the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative, and/or
- (vi) the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

57. (Currently amended) The precursor of the substrate of claim 148, wherein the photolabile side chain comprises the structure



58. (Currently amended) The precursor of the substrate of claim 56, wherein the precursor of the substrate comprises a serine with a photolabile side chain that blocks phosphoryl transfer.

59. (Currently amended) The precursor of a substrate for a protein kinase, where the precursor comprises SEQ ID NO:3 and ~~of claim 56, wherein the substrate~~ has the structure



60. (Currently amended) The substrate or the precursor of the substrate of claim 148, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% change in fluorescence intensity.

61. (Currently amended) The substrate or the precursor of the substrate of claim 148, wherein after removal of the photolabile side chain, phosphorylation by a protein

kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% increase in fluorescence intensity.

62. (Currently amended) The substrate or the precursor of the substrate of claim 148, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% decrease in fluorescence intensity.

63. (Previously presented) The substrate of claim 60, wherein phosphorylation of the substrate by the protein kinase produces at least a 70% change in fluorescence intensity.

64. (Original) The substrate of claim 63, wherein phosphorylation of the substrate by the protein kinase produces at least a 100% change in fluorescence intensity.

65. (Original) The substrate of claim 64, wherein phosphorylation of the substrate by the protein kinase produces at least a 150% change in fluorescence intensity.

66. (Original) The substrate of claim 65, wherein phosphorylation of the substrate by the protein kinase produces at least a 250% change in fluorescence intensity.

67. (Previously presented) The substrate of claim 56, wherein the substrate is specific for a protein kinase subtype.

68. (Original) The substrate of claim 67, wherein the substrate is specific for protein kinase C.

69. (Original) The substrate of claim 68, wherein the substrate is specific for isoforms α , β , and γ of protein kinase C.

70. (Withdrawn) The substrate of claim 67, wherein the substrate is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca^{+} /calmodulin-dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

71. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

72. (Canceled)

73. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore is attached to the C-terminal end of the peptide.

74. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore is attached to the N-terminal end of the peptide.

75. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein a fluorophore is attached to each terminal end of the peptide.

76. (Currently amended) The substrate or the precursor of the substrate of claim

75, wherein fluorophores with distinct photophysical properties are attached to different terminal ends of the peptide.

77. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide.

78. (Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

79. (Withdrawn and Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore comprises a fluorescein group.

80. (Withdrawn and Currently amended) The substrate or the precursor of the substrate of claim 56, wherein the fluorophore comprises a dansyl group, an acridine group, an Alexa Fluor® group, a BODIPY® group, an Oregon Green® group, a Rhodamine Green group, a Rhodamine Red-X group, a Texas Red® group, a Cascade Blue® group, a Cascade Yellow group, a Marina Blue® group, a Pacific Blue group, an AMCA-X group, or a coumarin group.

81-82. (Canceled)

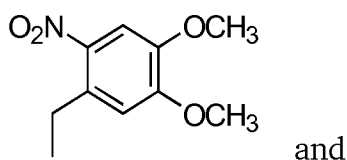
83. (Currently amended) A precursor for a substrate for a protein kinase, wherein the precursor for the substrate comprises:

a peptide comprising a serine, a threonine, or a tyrosine on a terminal end of the peptide;

at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide; and

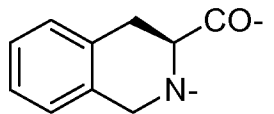
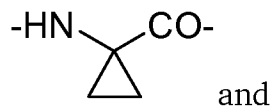
a photolabile side chain attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the substrate, and

wherein the the photolabile side chain comprises the structure



wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

84. (Withdrawn and Currently amended) The substrate or the precursor for the substrate of claim 56, wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of N-methyl glycine, L-proline, D-proline,

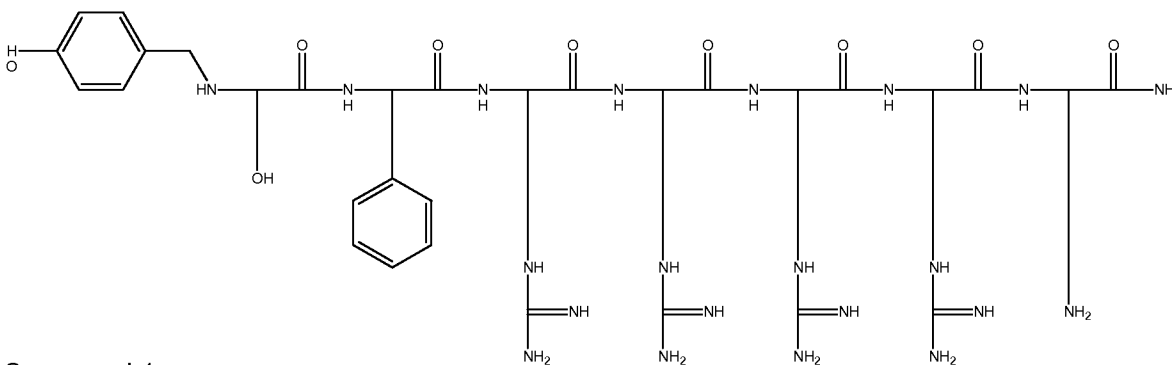


85. (Canceled)

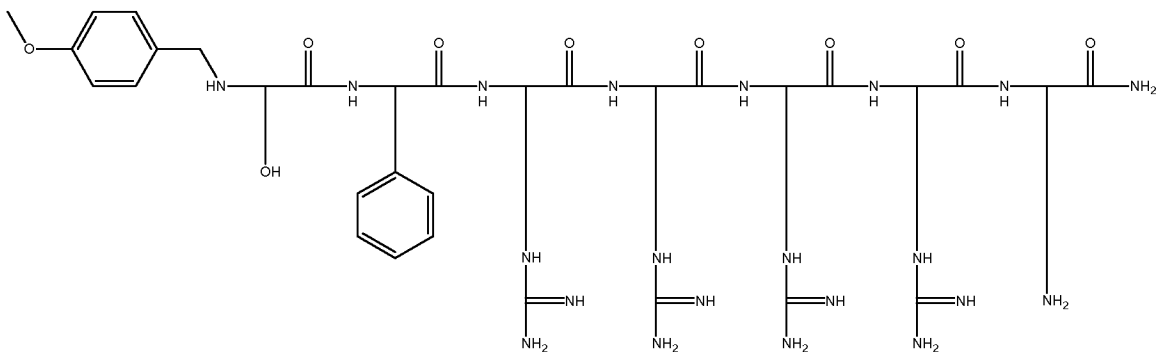
86. (Currently amended) A composition comprising the substrate or the precursor for the substrate of claim 56, and a carrier.

87. (Original) The composition of claim 86, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

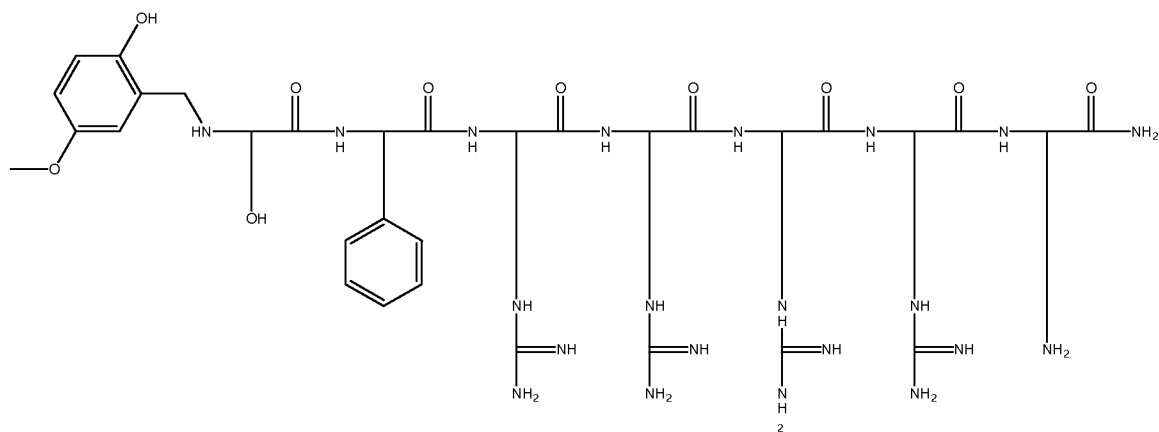
88. (Currently amended) A chemical compound comprising SEQ ID NO:3 selected from the group of compounds consisting of:



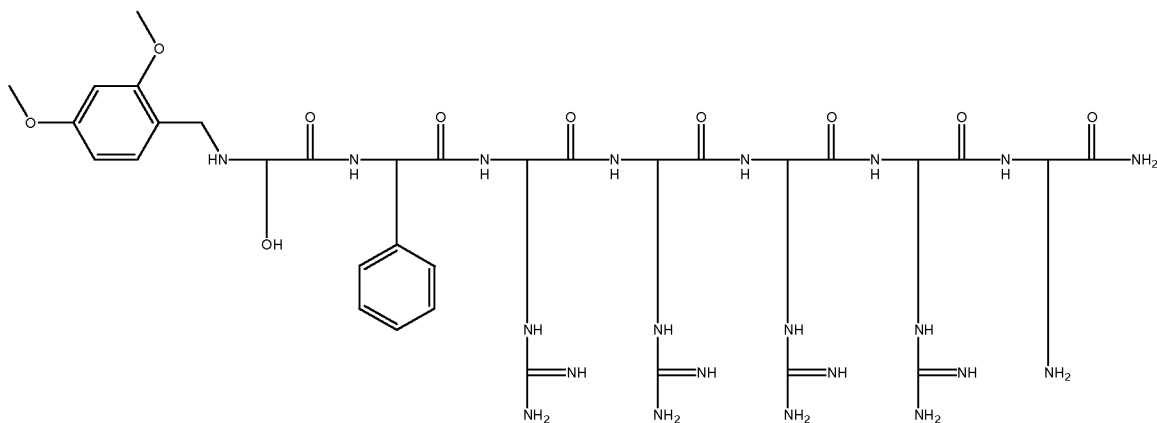
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Compound 2

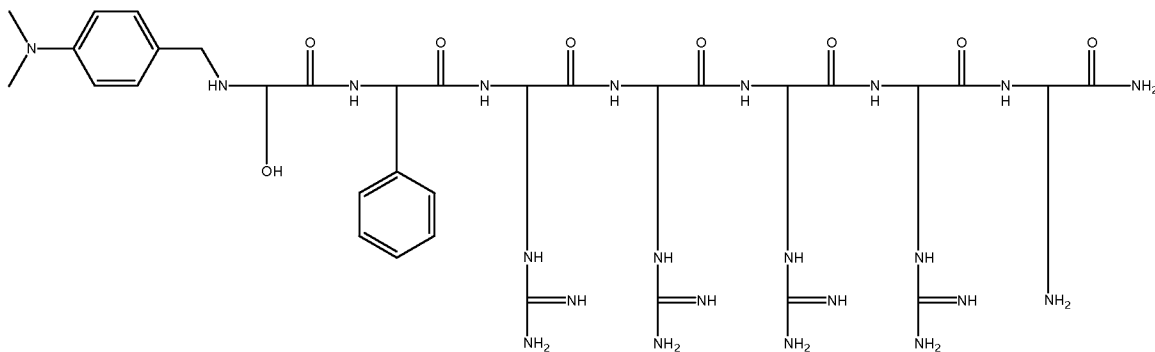


Compound 3

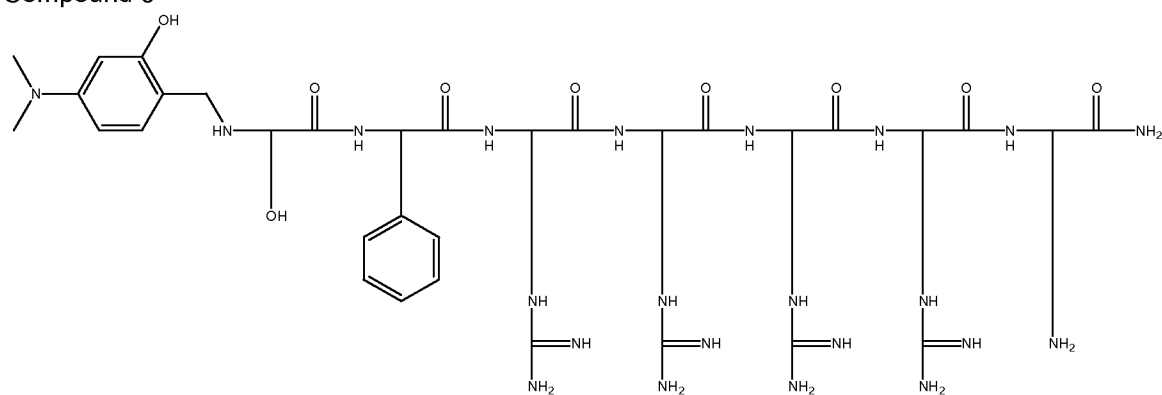


Compound 4

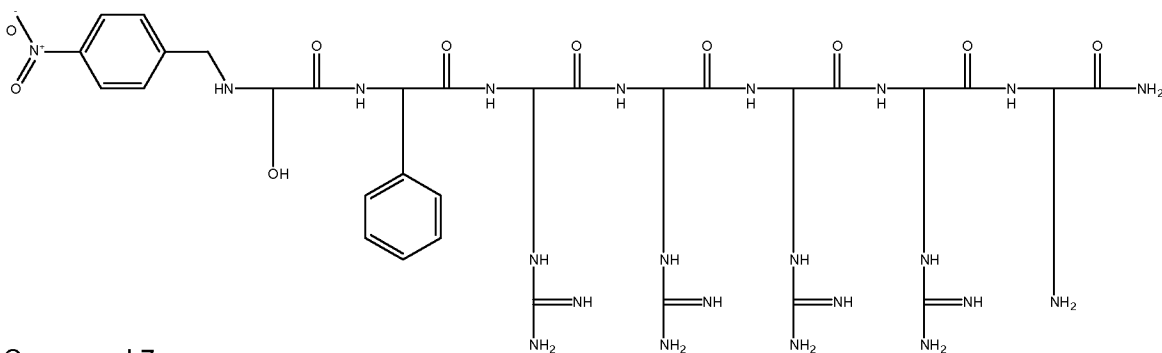
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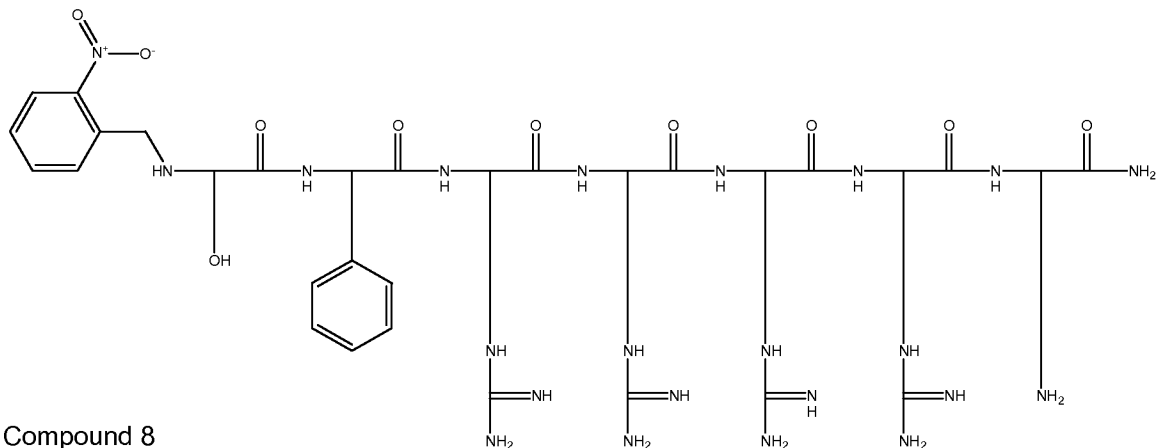
Compound 5



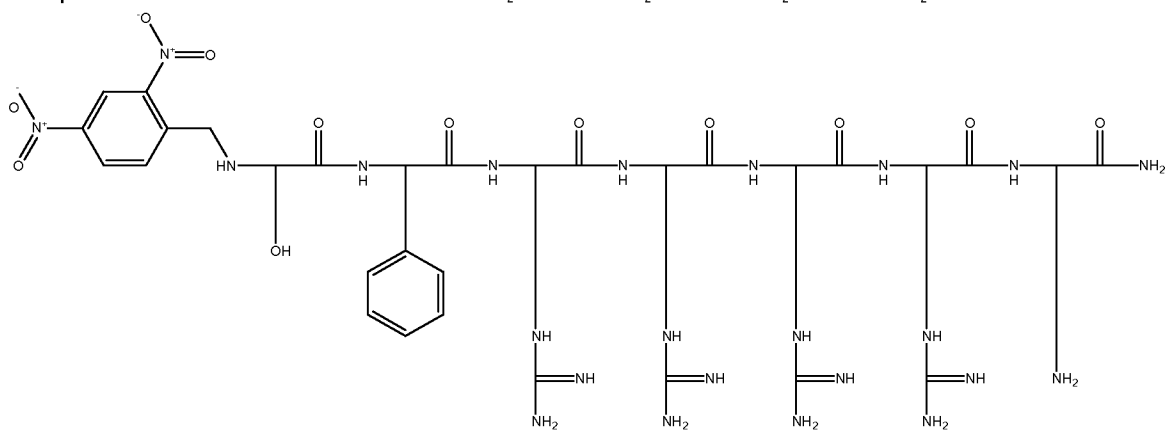
Compound 6



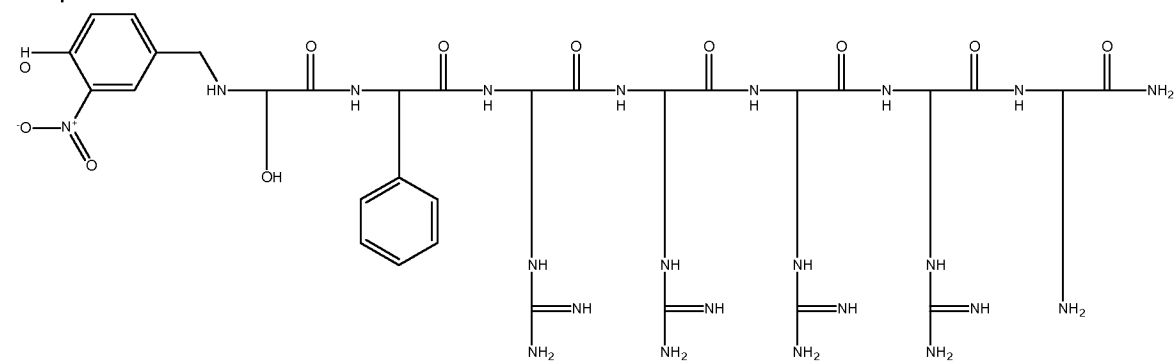
Compound 7



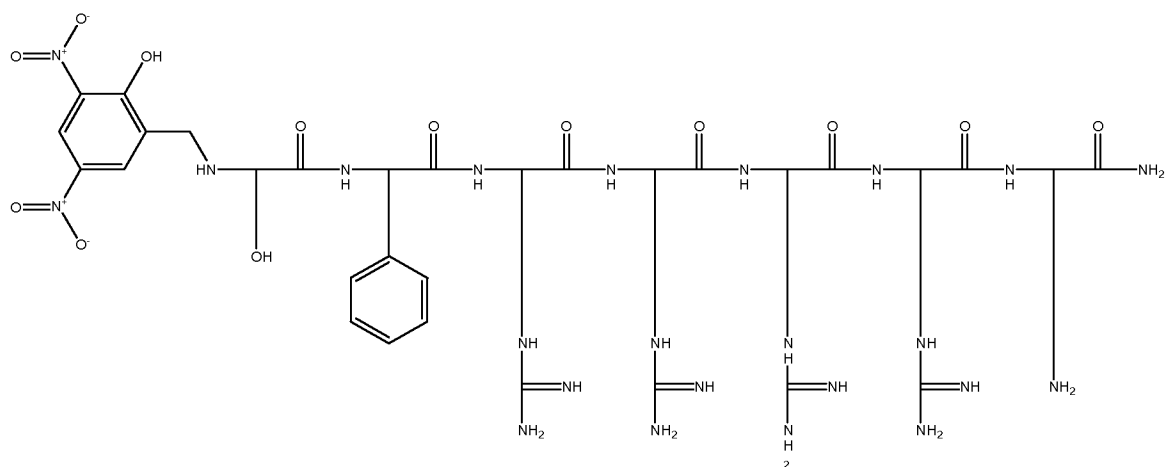
Compound 8



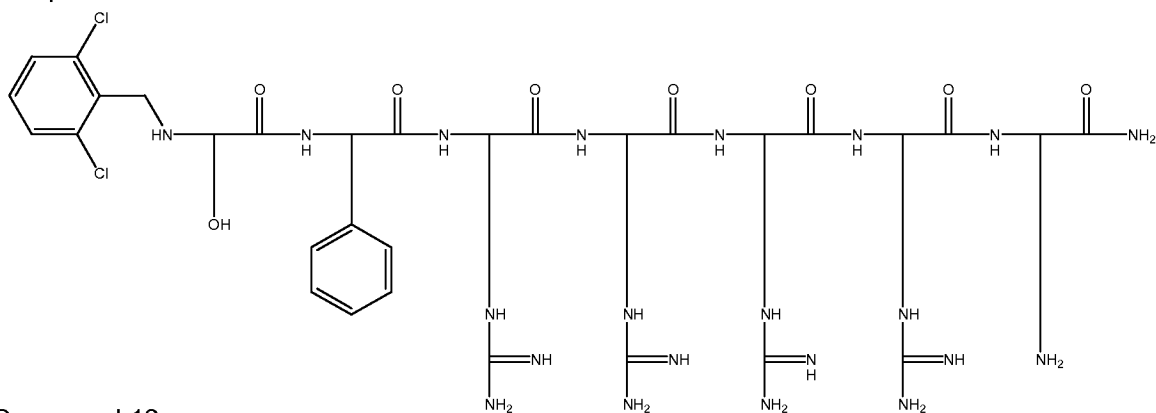
Compound 9



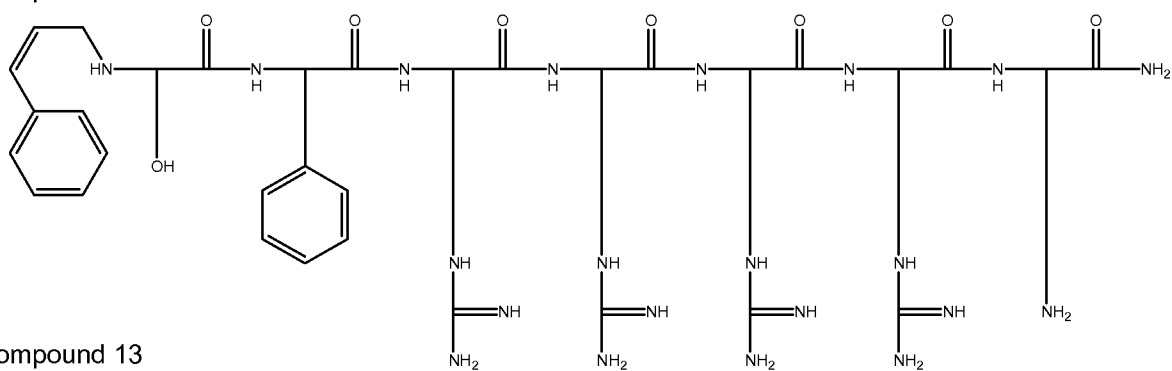
Compound 10



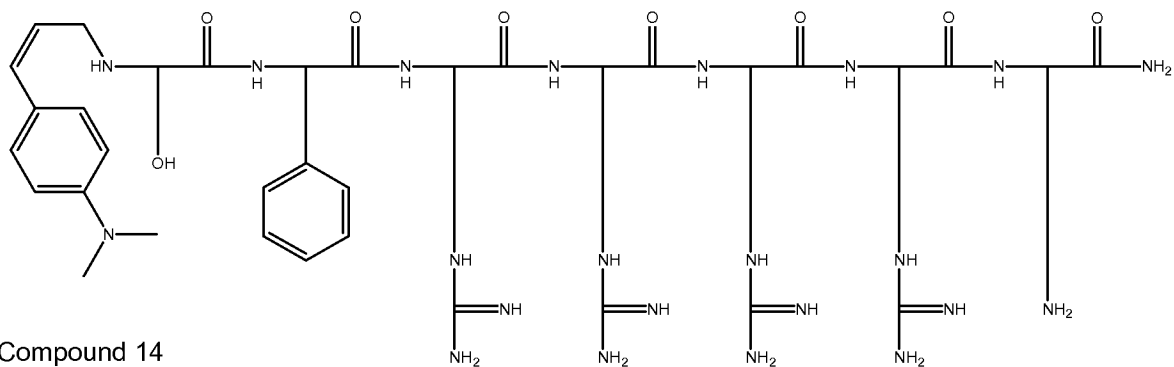
Compound 11



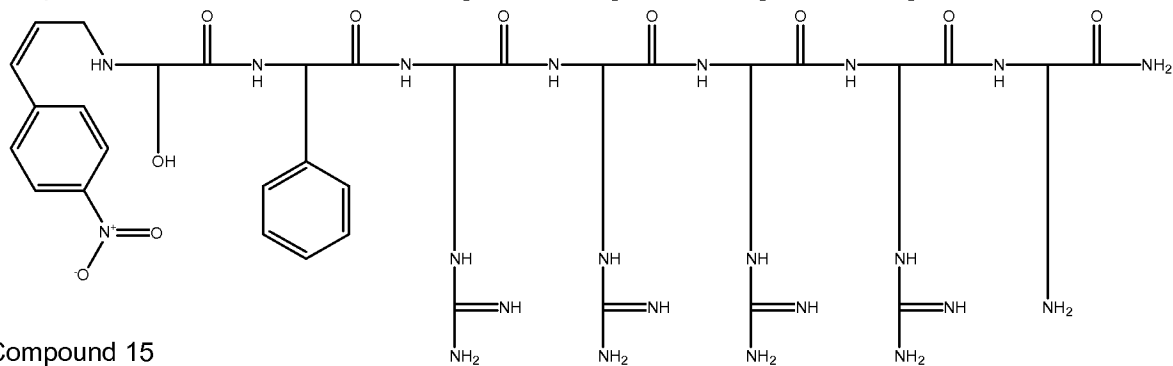
Compound 12



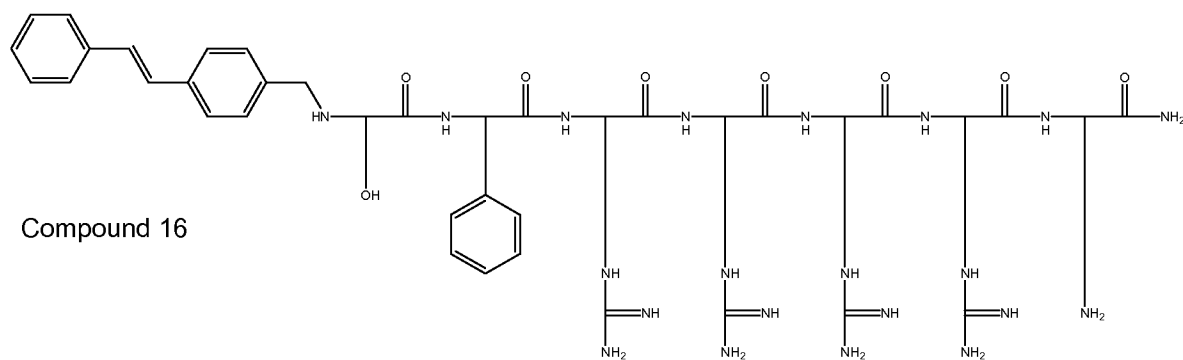
Compound 13



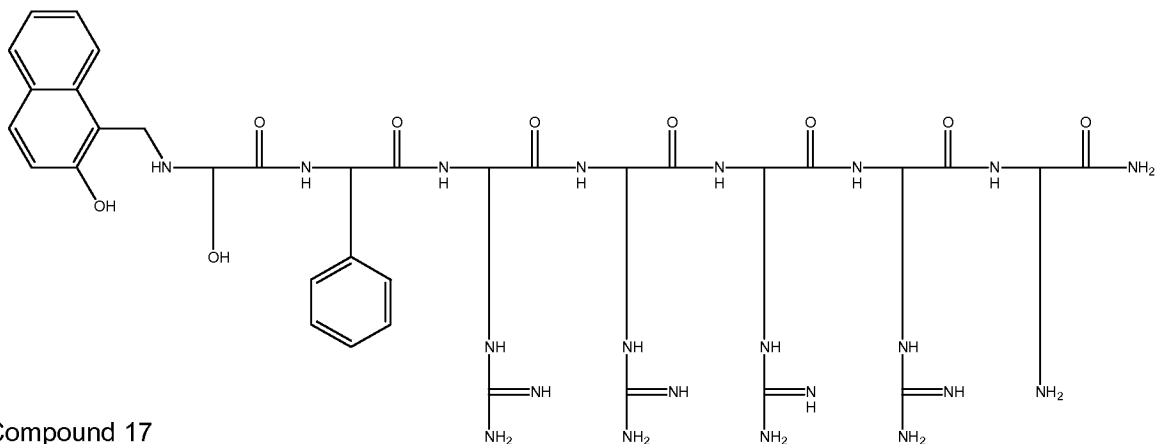
Compound 14



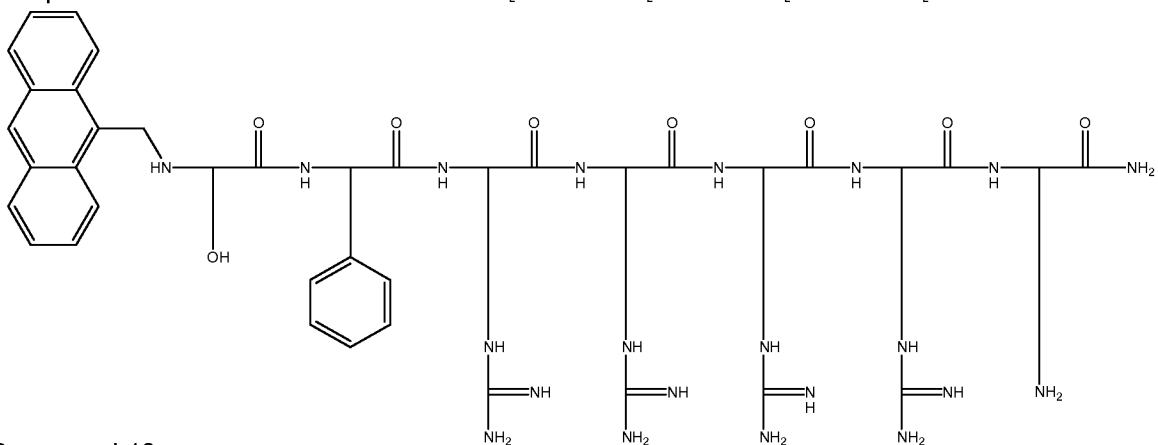
Compound 15



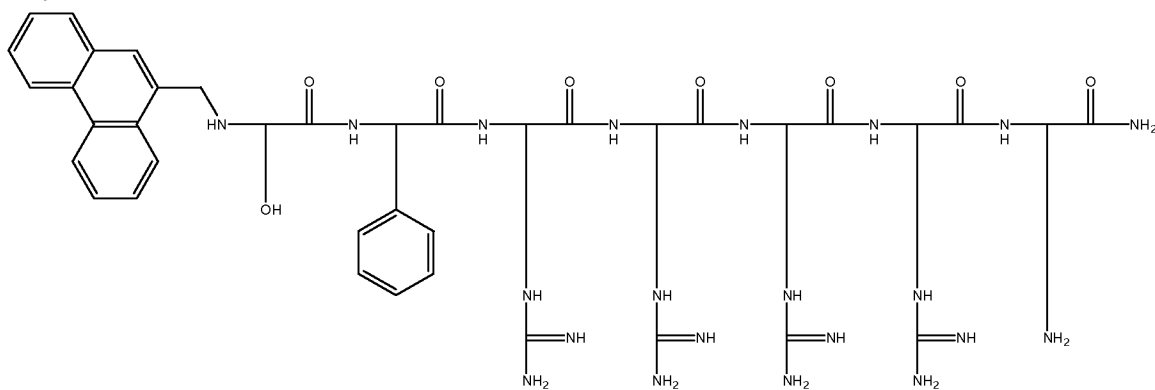
Compound 16



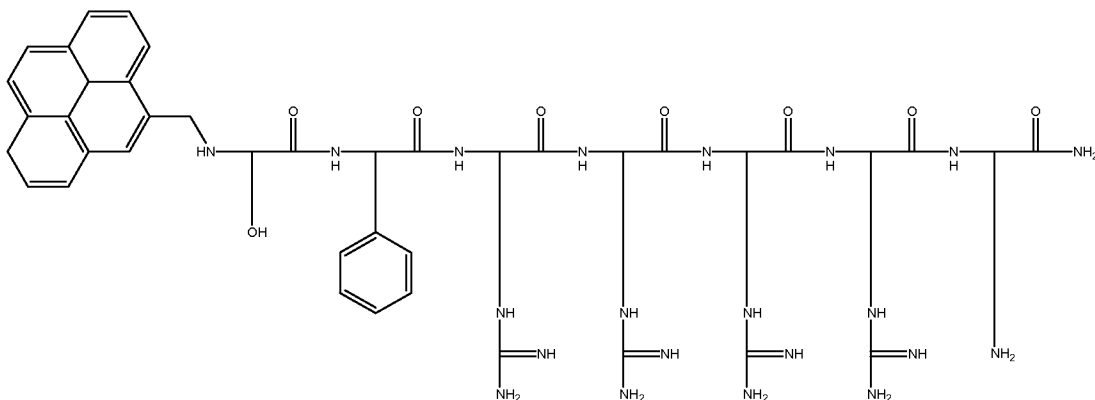
Compound 17



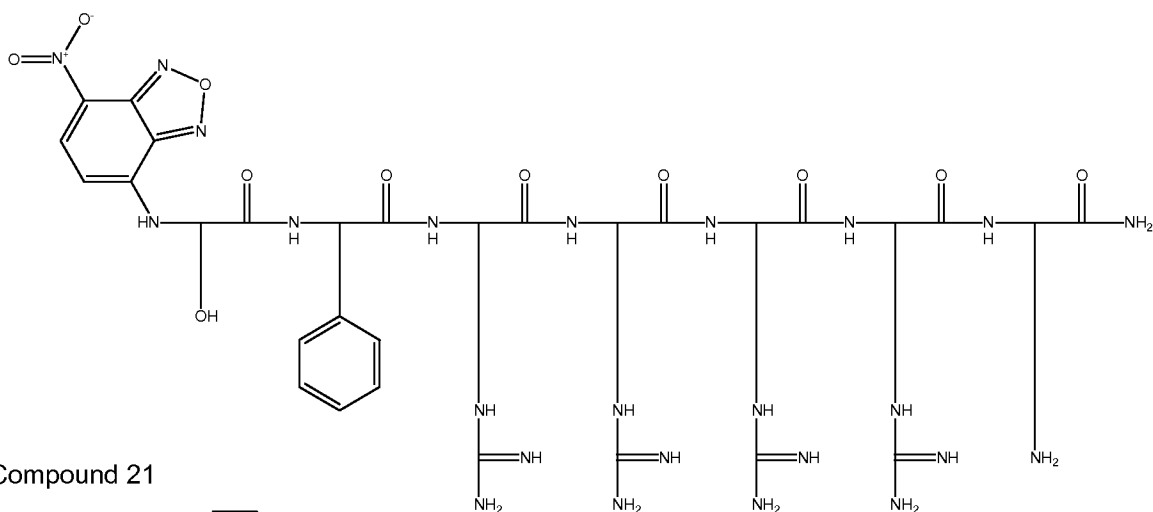
Compound 18



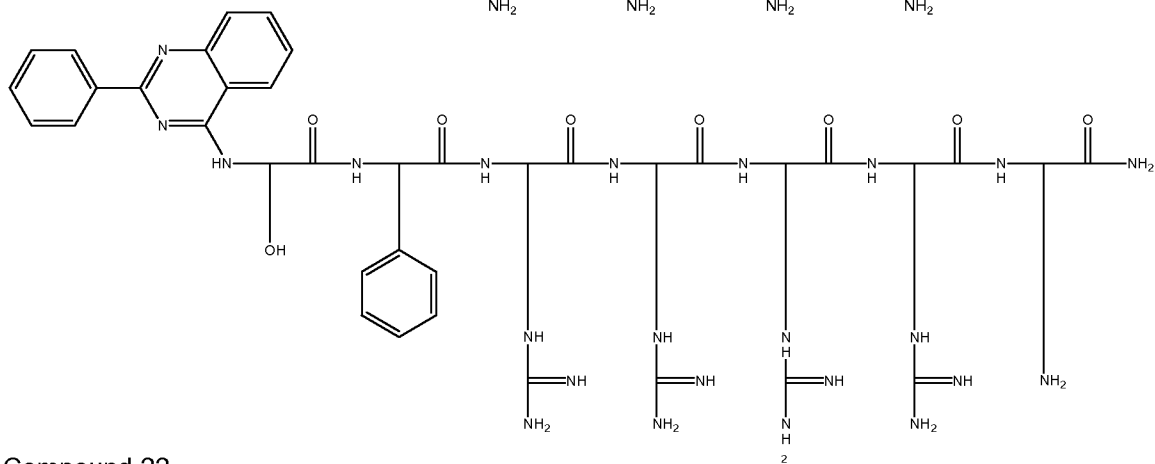
Compound 19



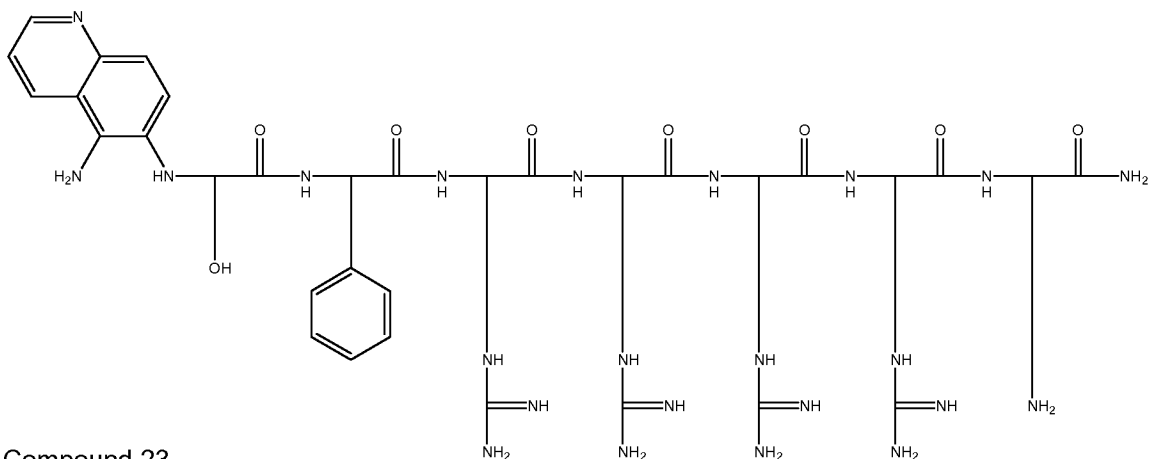
Compound 20



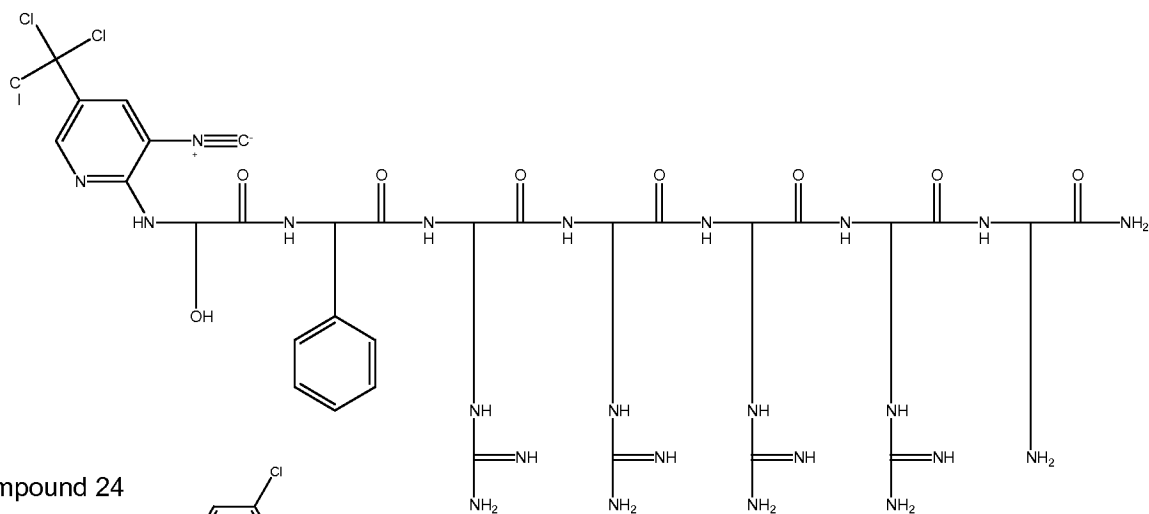
Compound 21



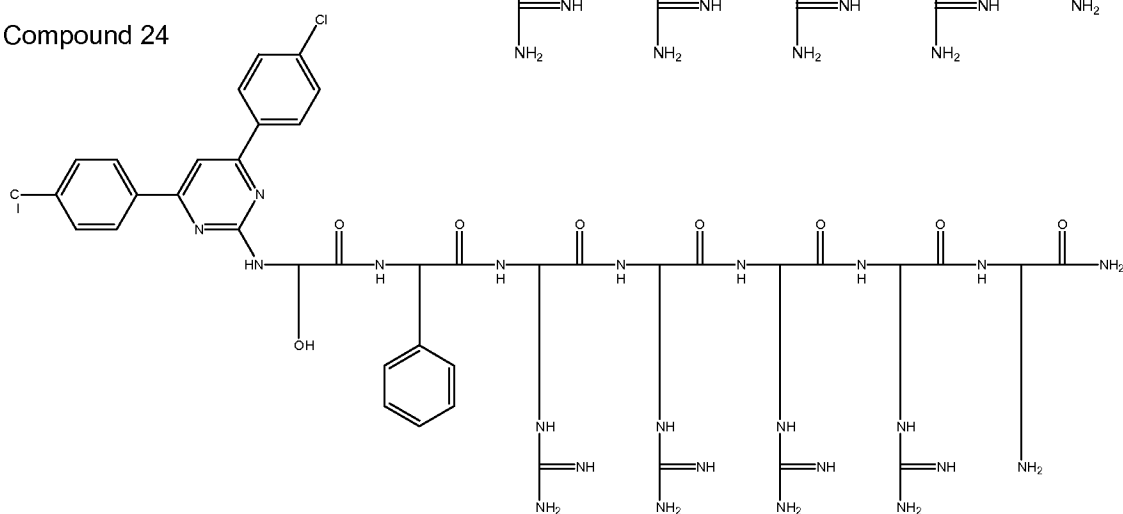
Compound 22



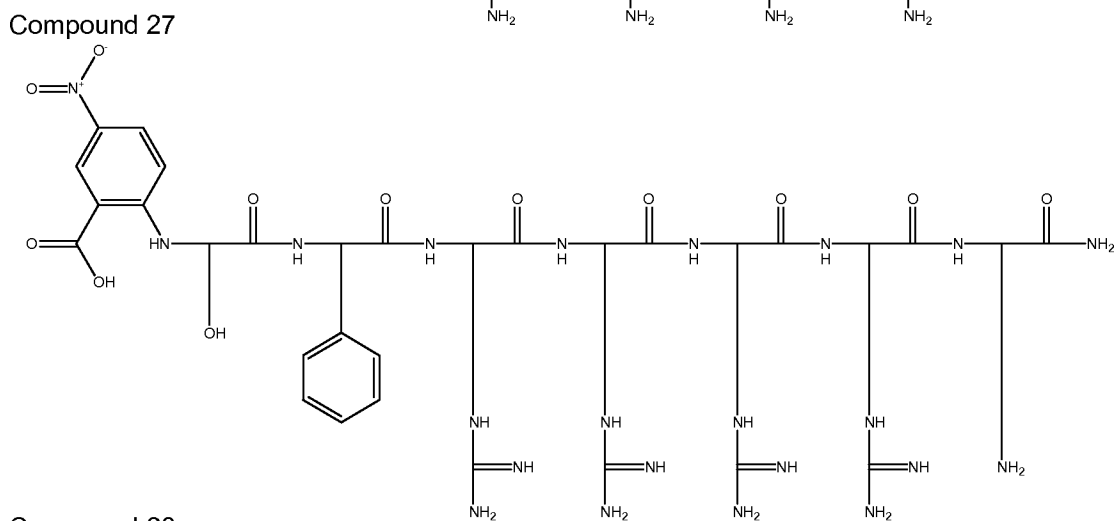
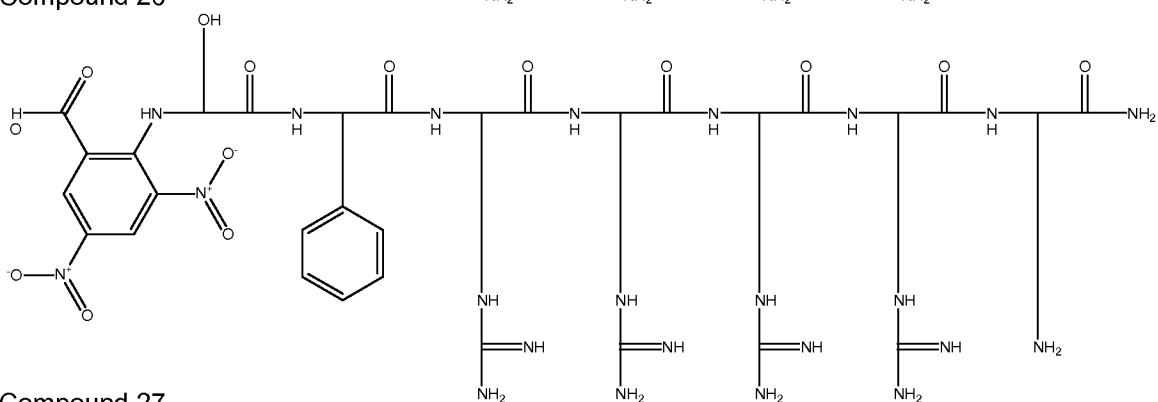
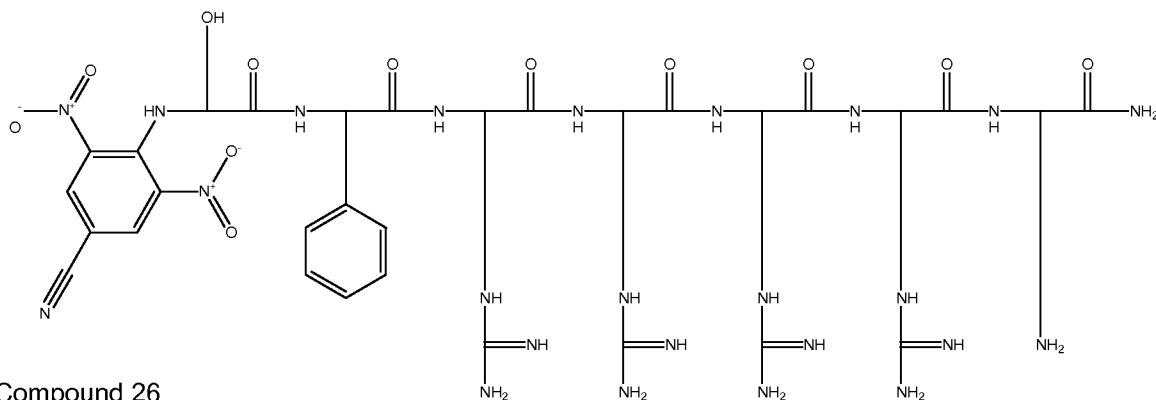
Compound 23



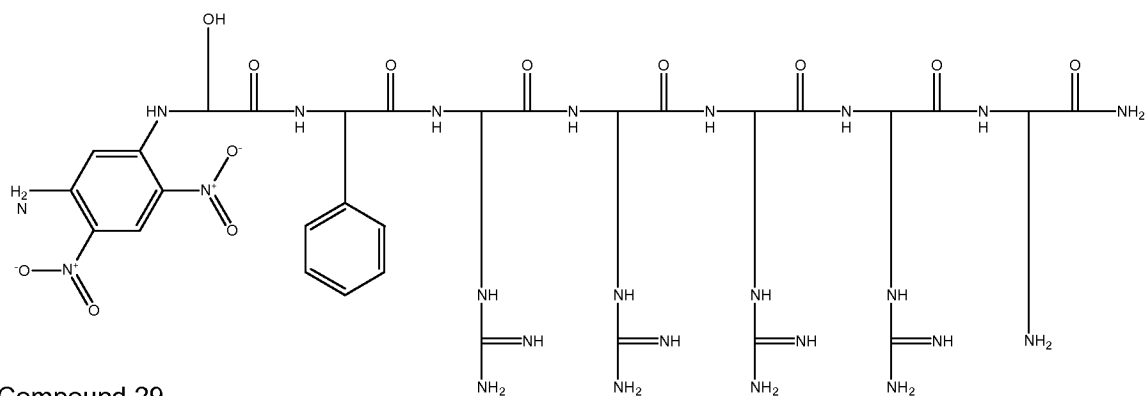
Compound 24



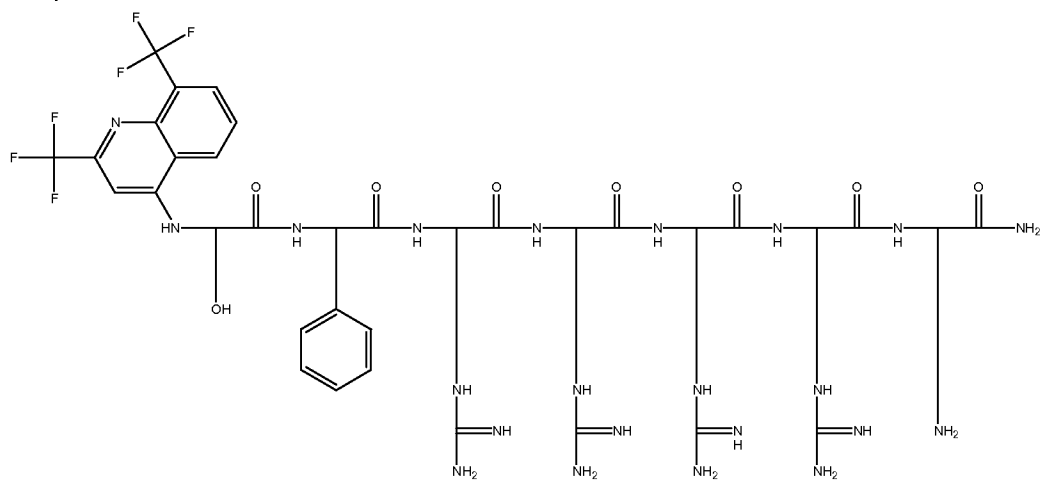
Compound 25



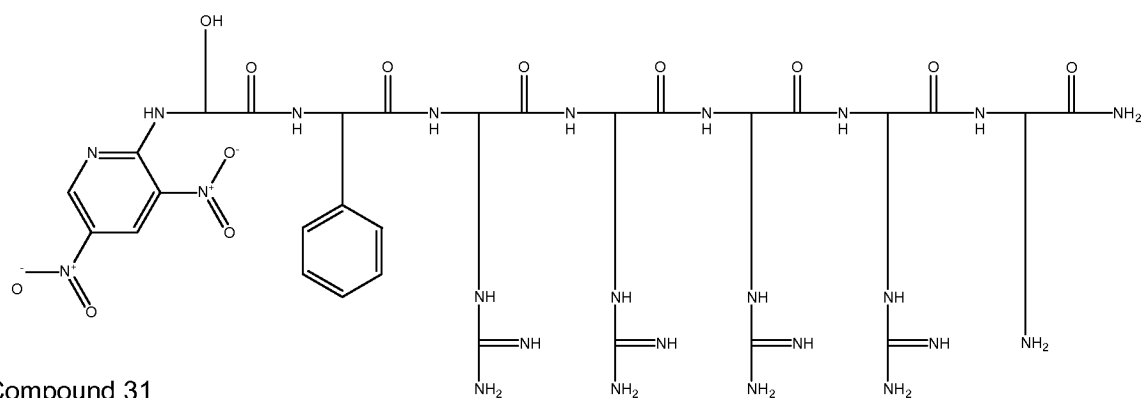
439227.1



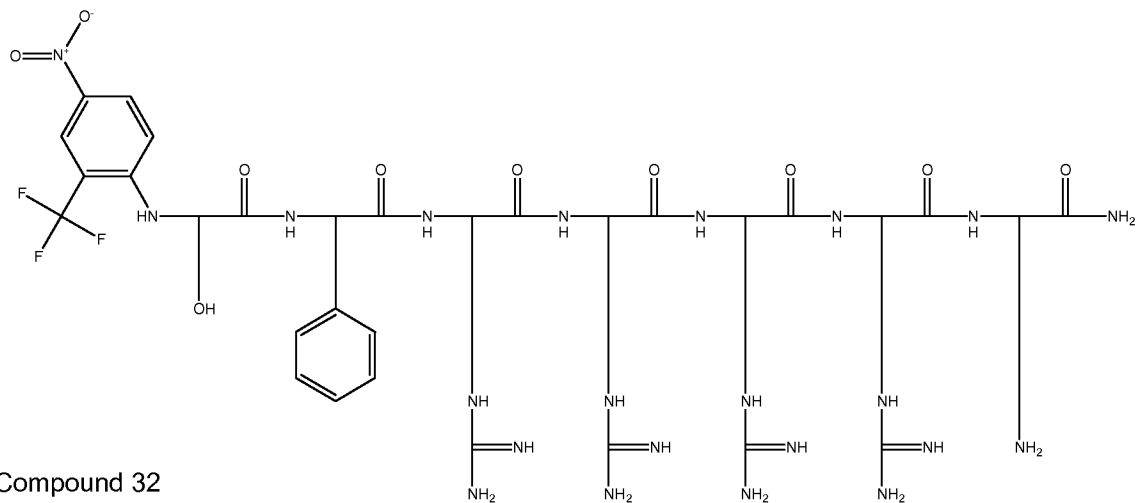
Compound 29



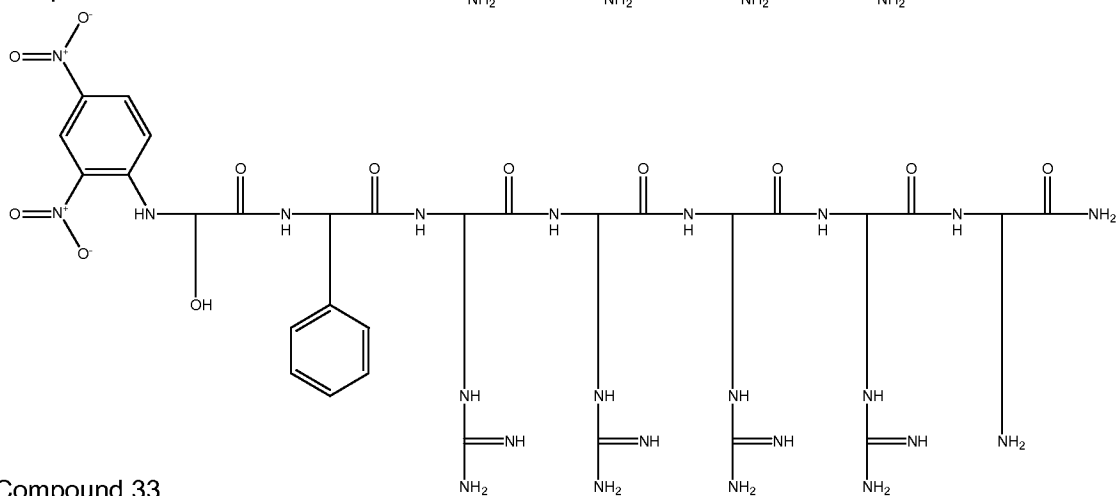
Compound 30



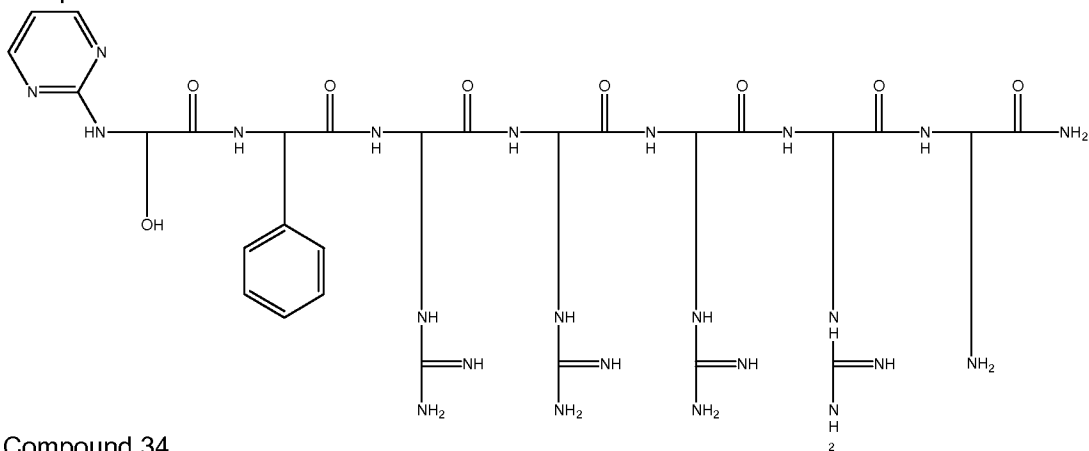
Compound 31



Compound 32

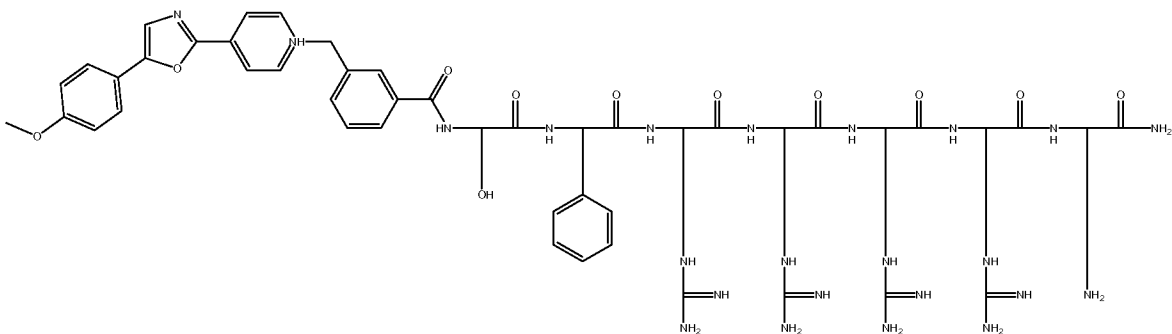


Compound 33

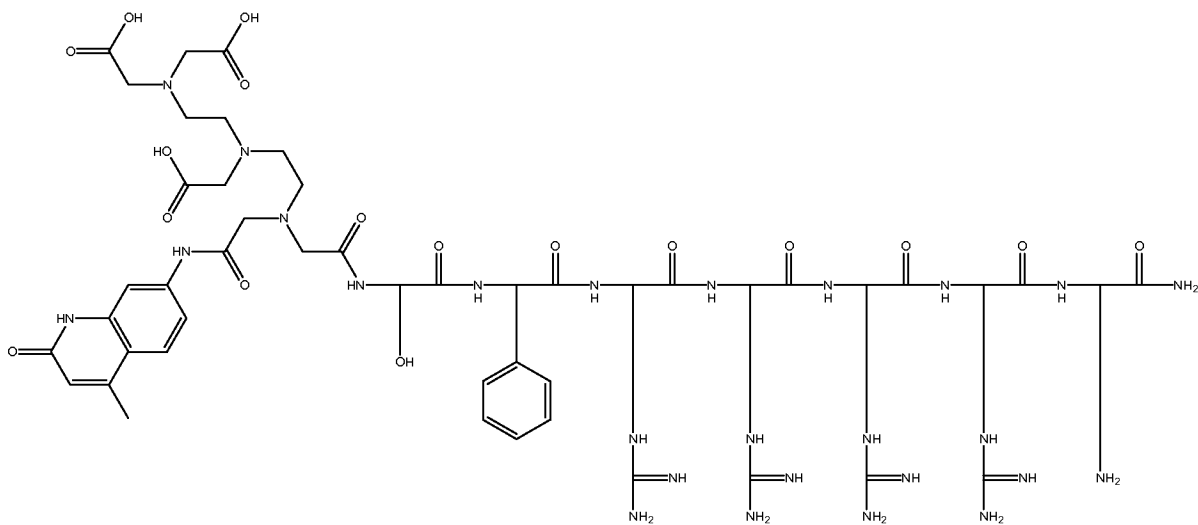


Compound 34

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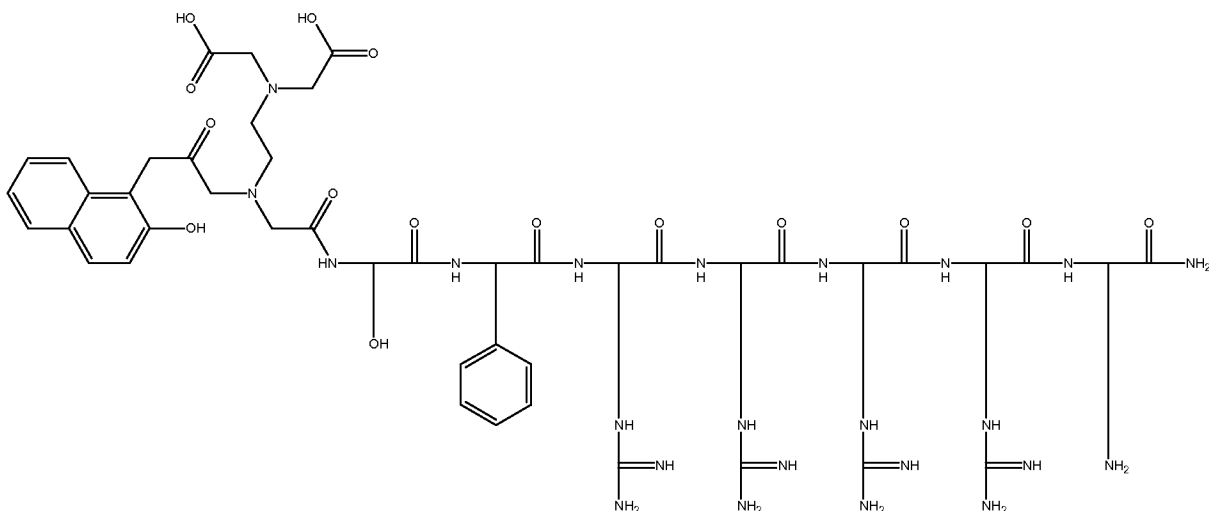


Compound 35

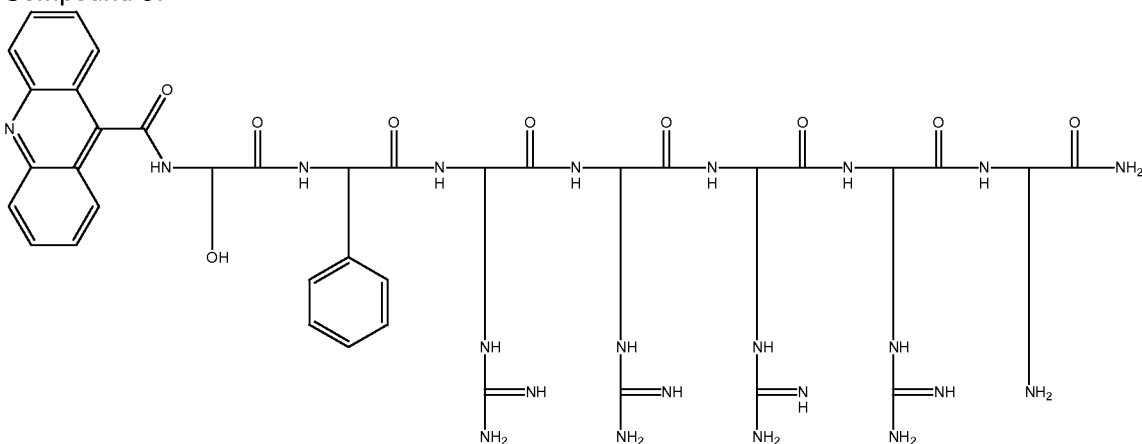


Compound 36

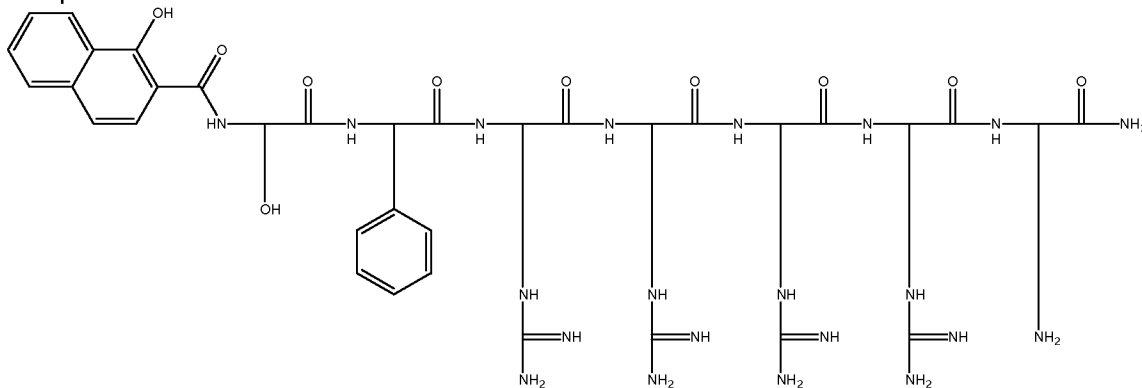
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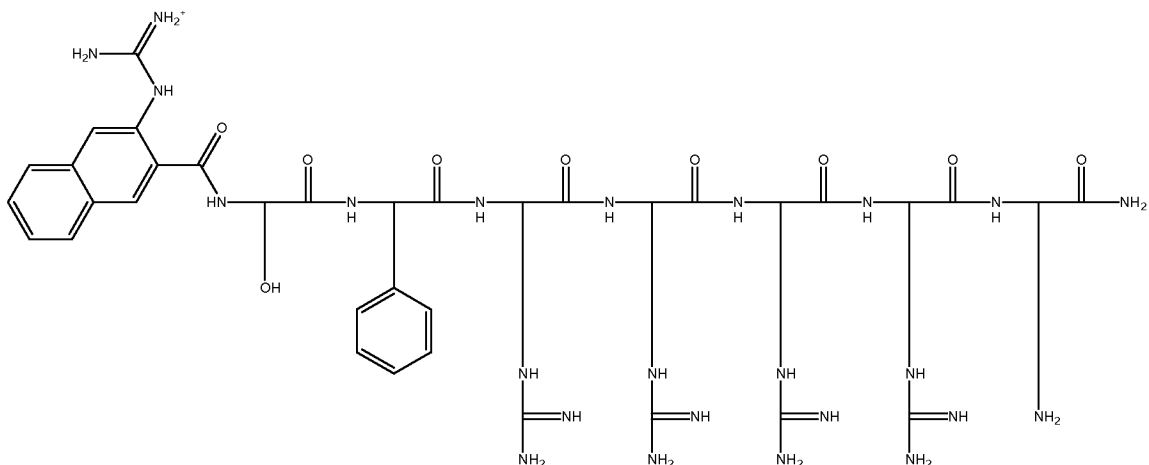
Compound 37



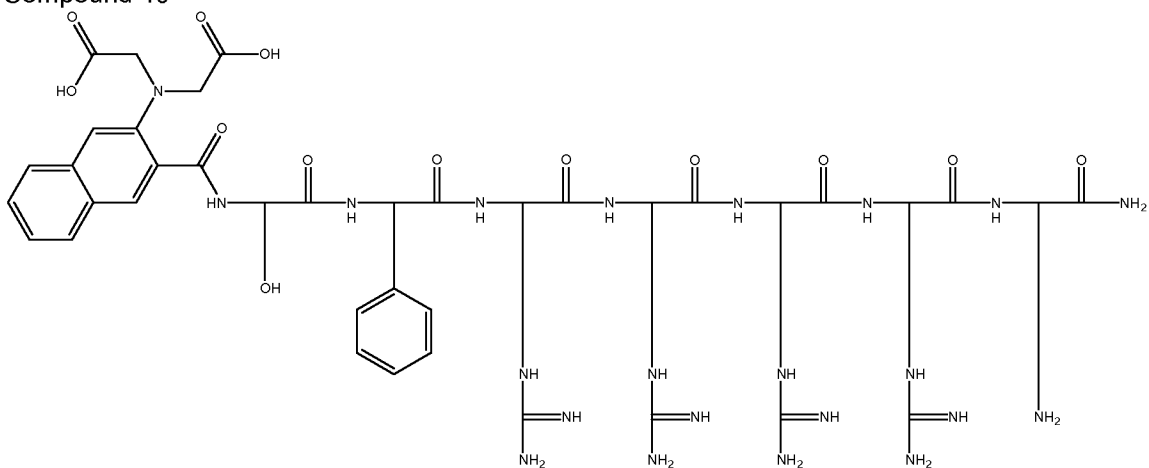
Compound 38



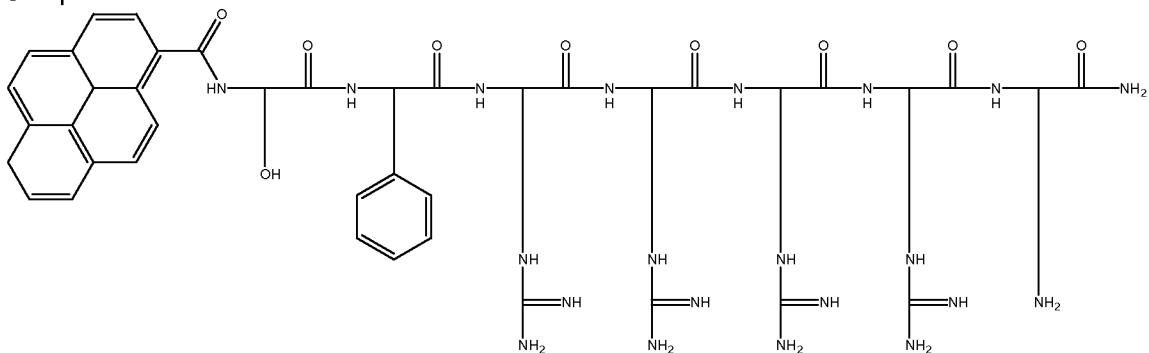
Compound 39



Compound 40

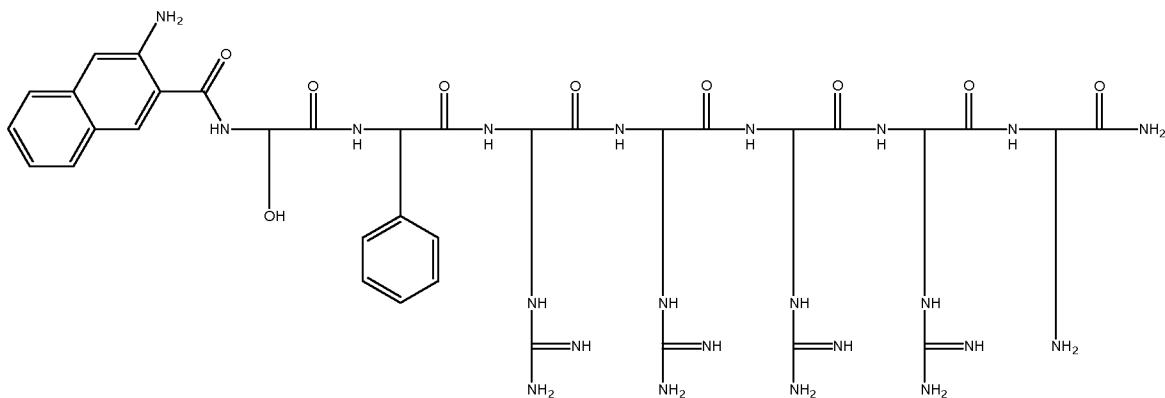


Compound 41

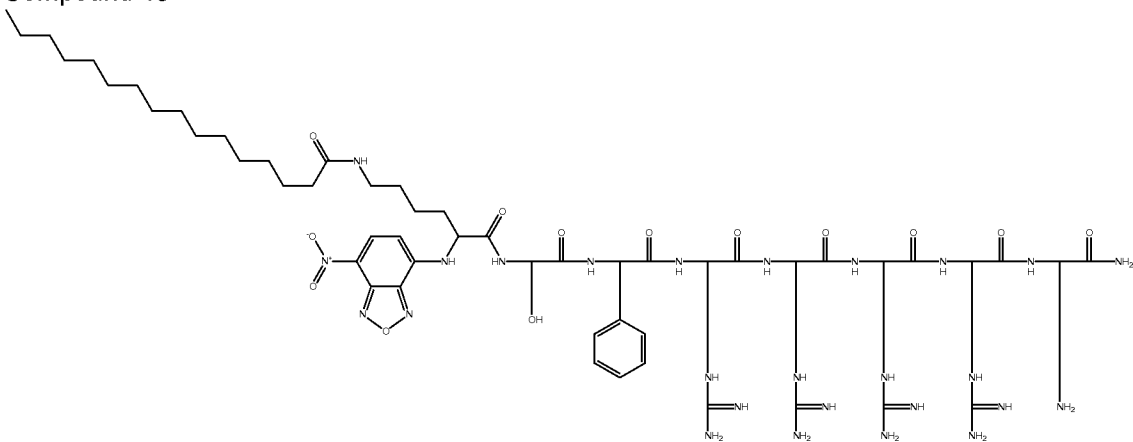


Compound 42

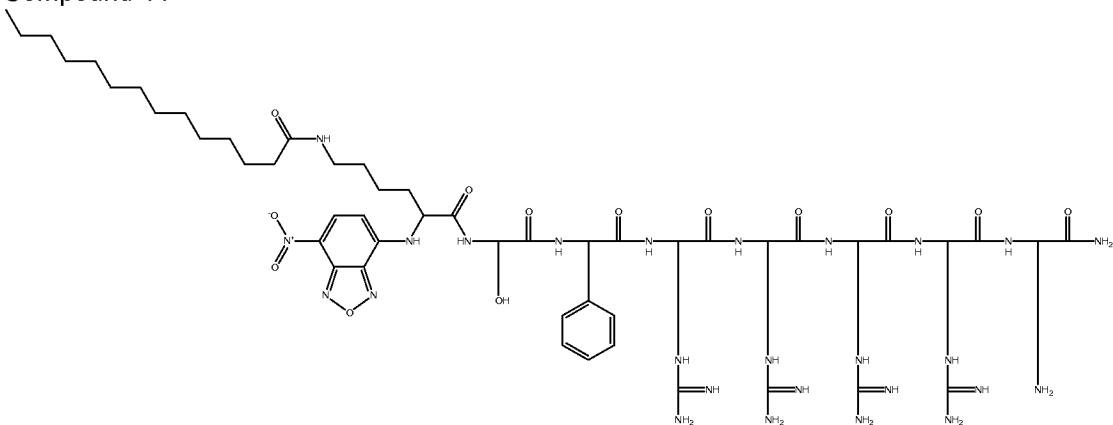
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Compound 43

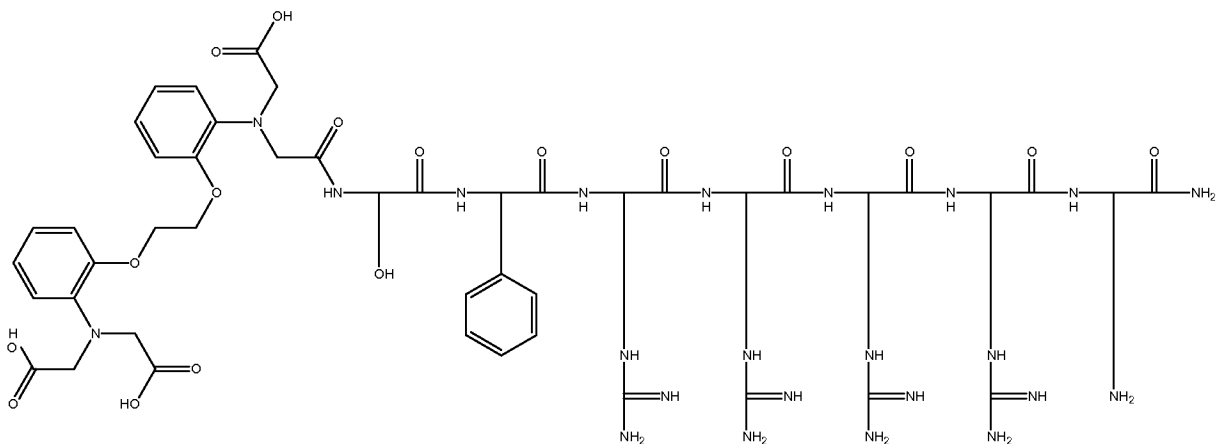


Compound 44

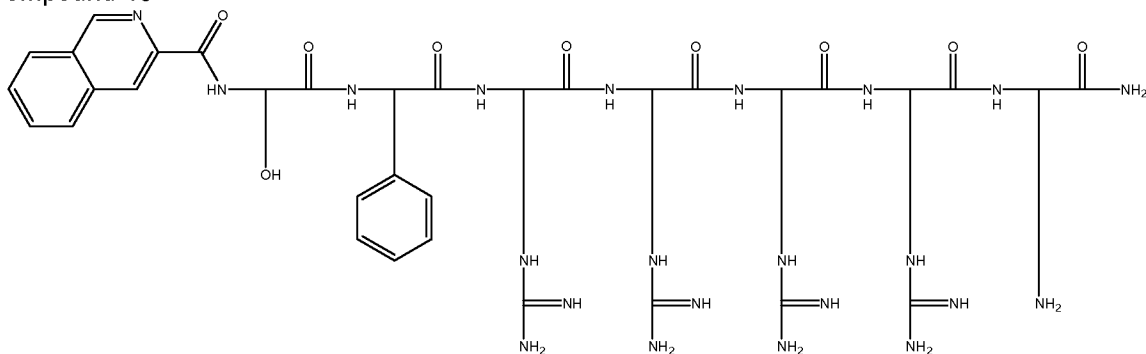


Compound 45

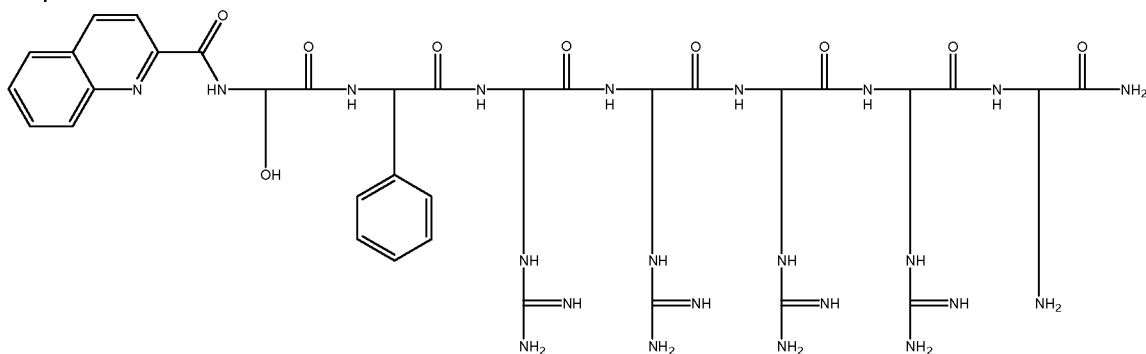
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Compound 46

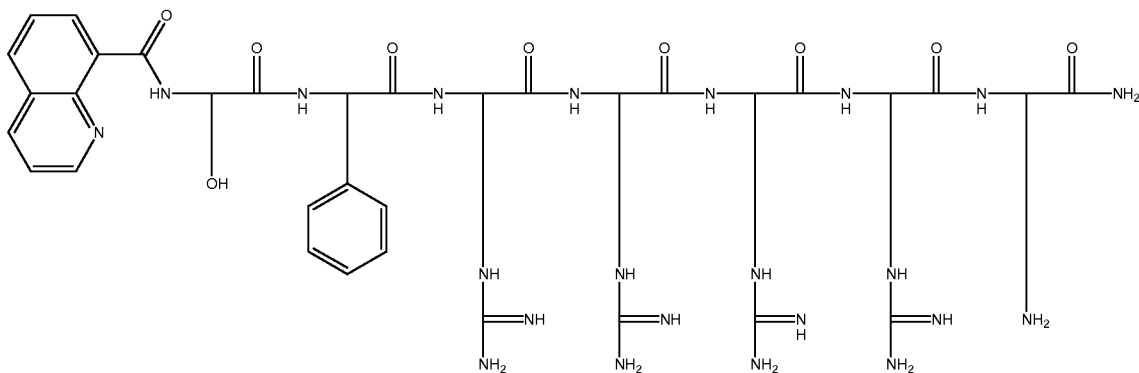


Compound 47

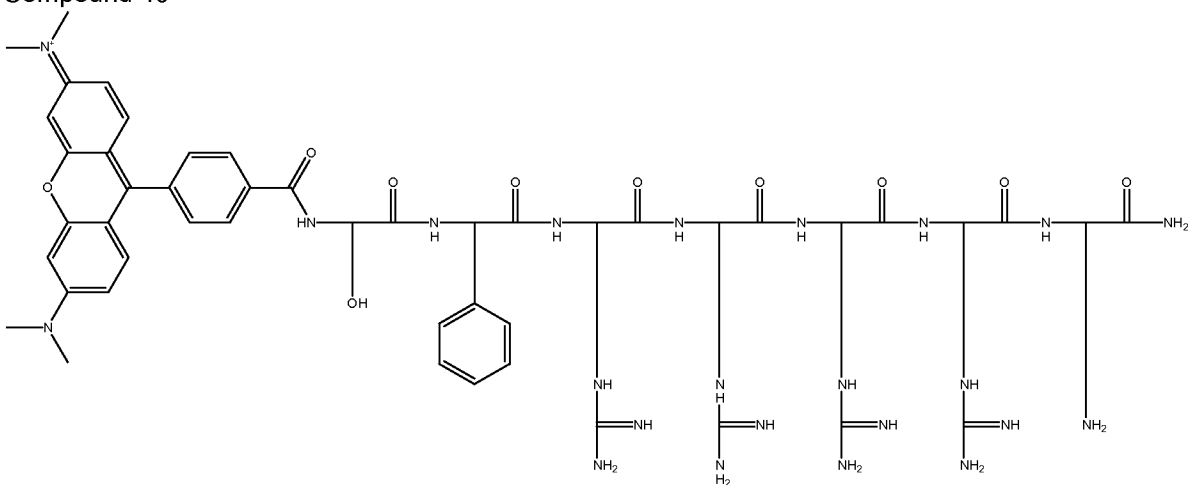


Compound 48

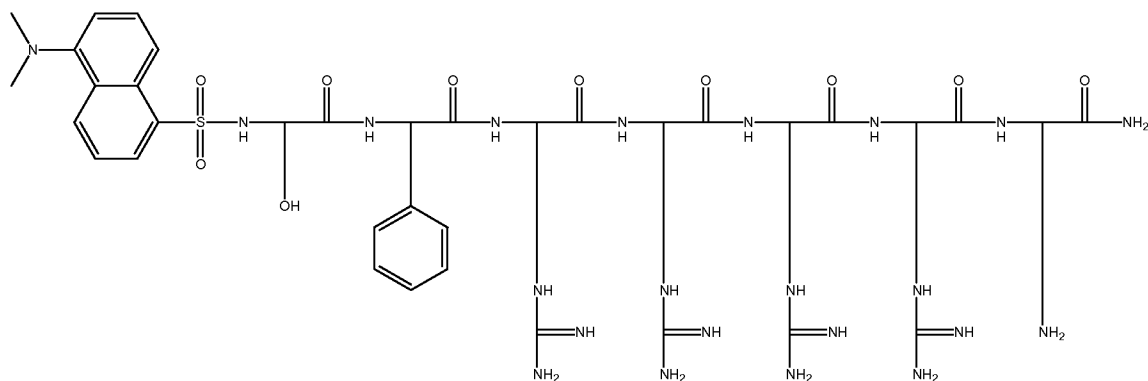
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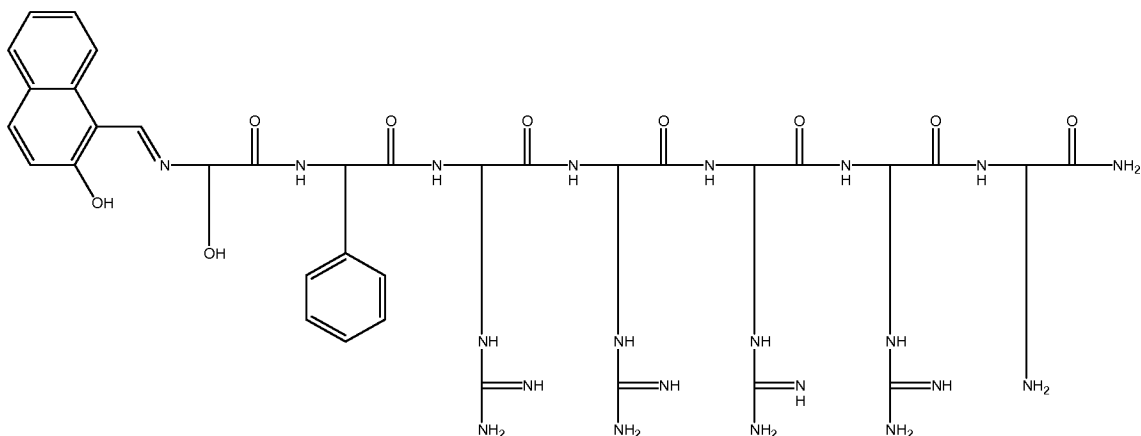
Compound 49



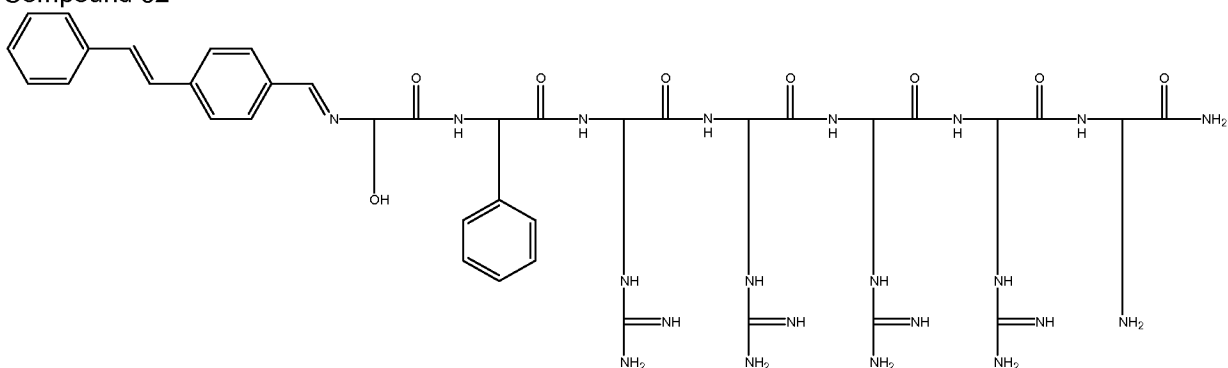
Compound 50



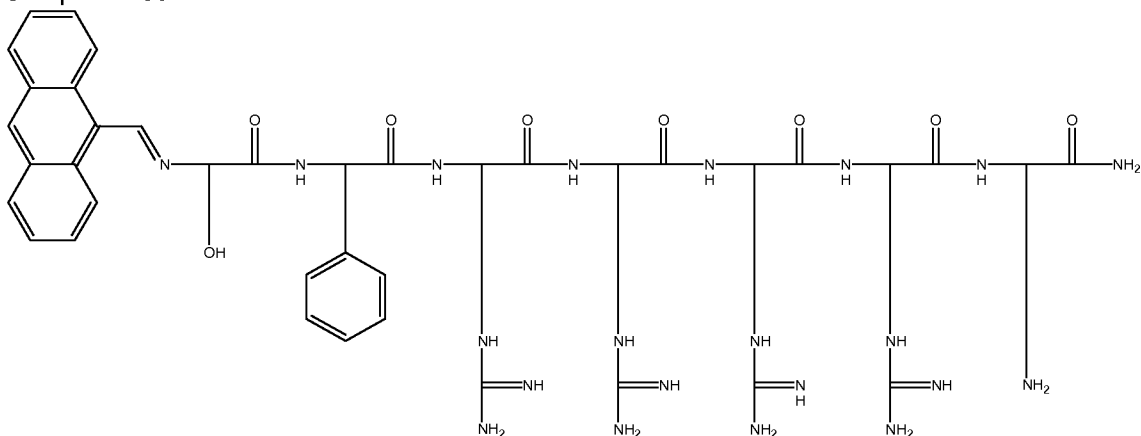
Compound 51



Compound 52

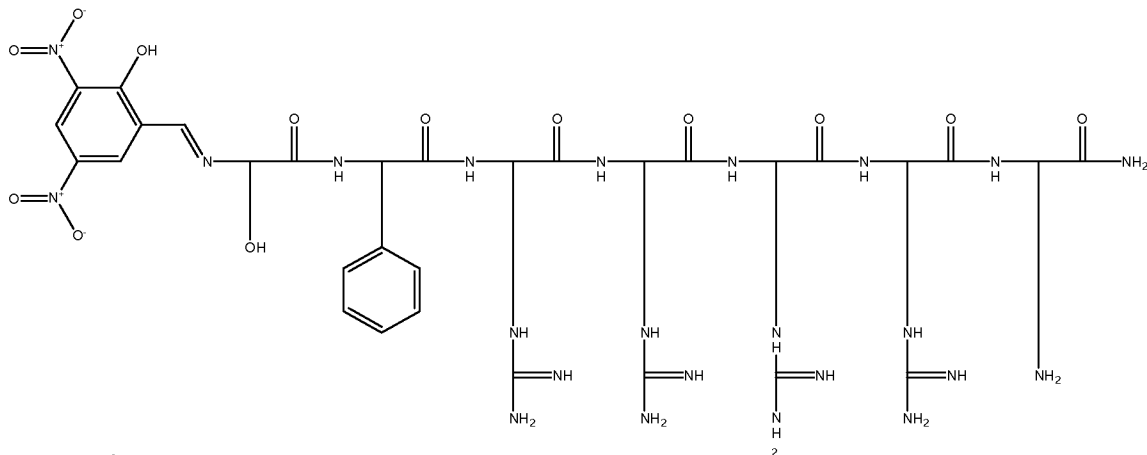


Compound 53

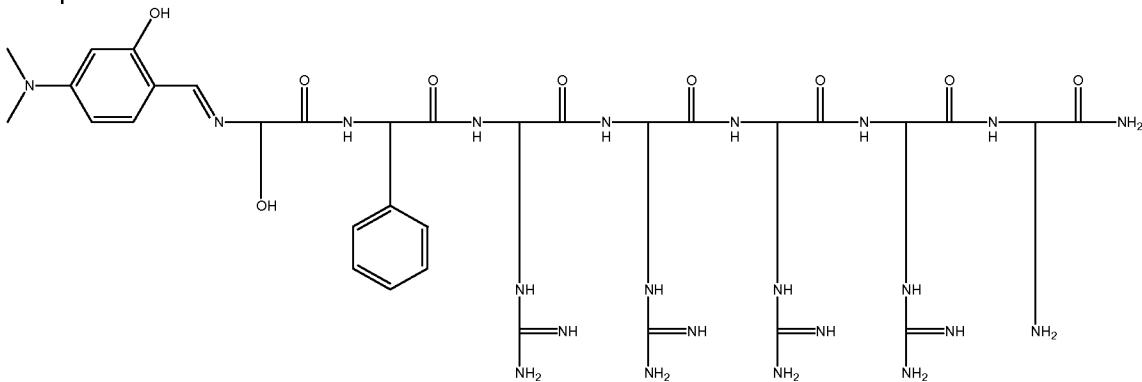


Compound 54

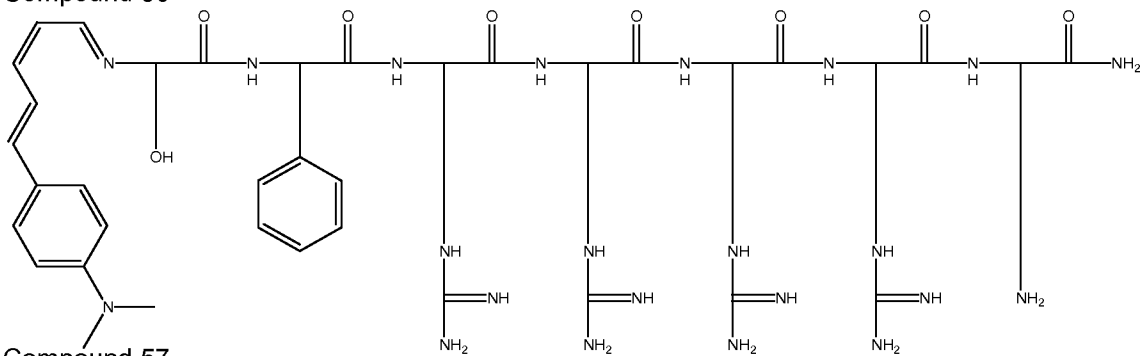
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Compound 55

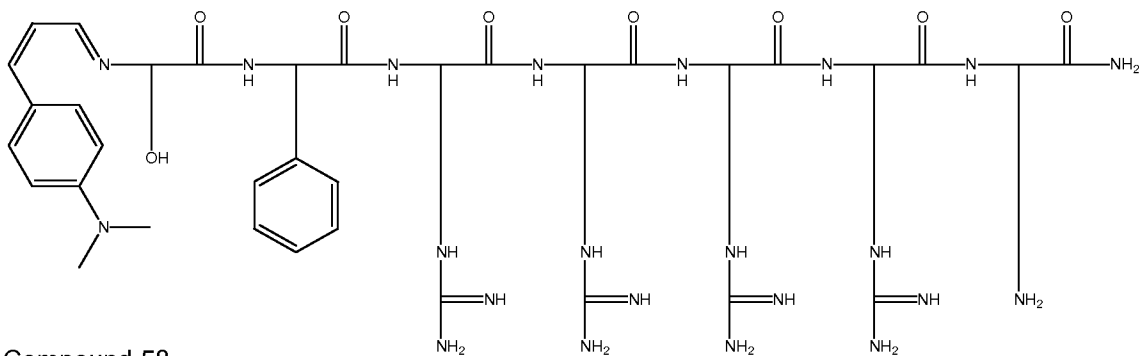


Compound 56

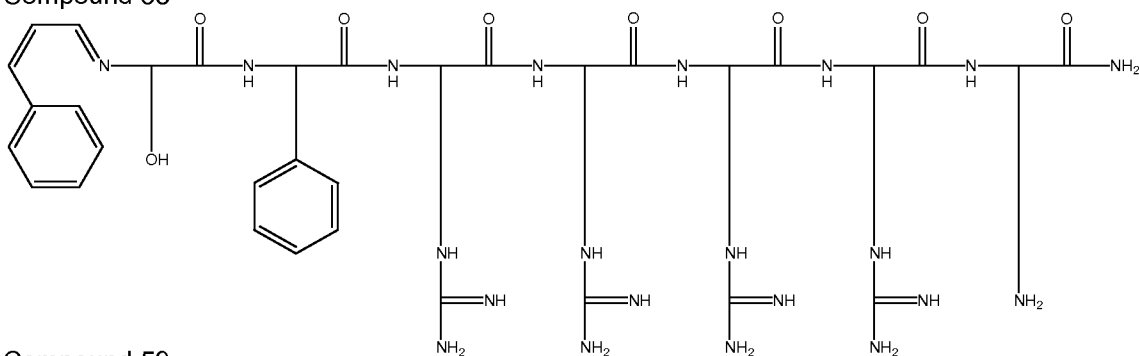


Compound 57

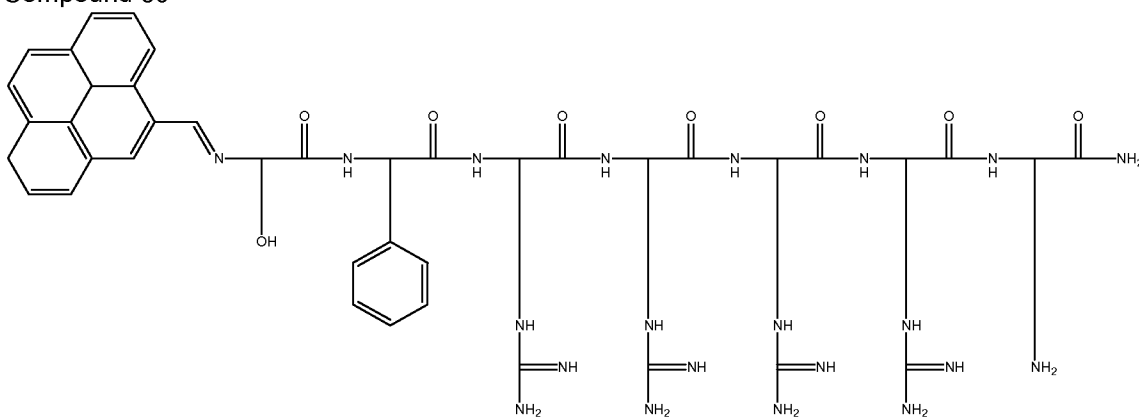
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Compound 58

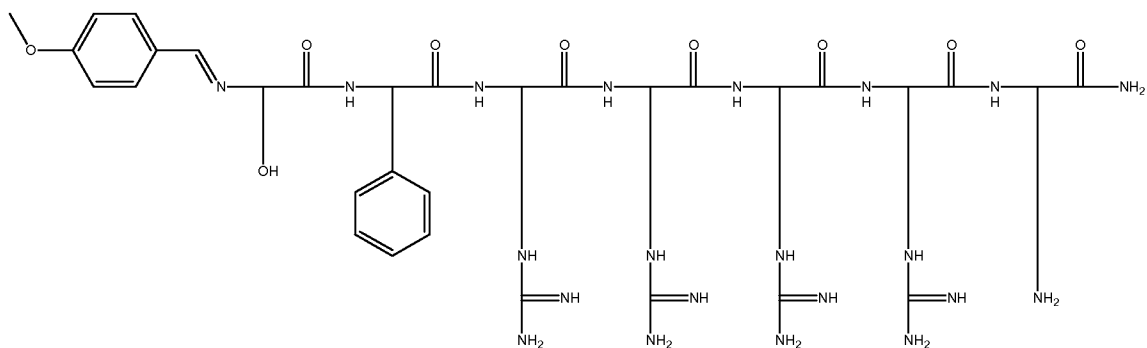


Compound 59

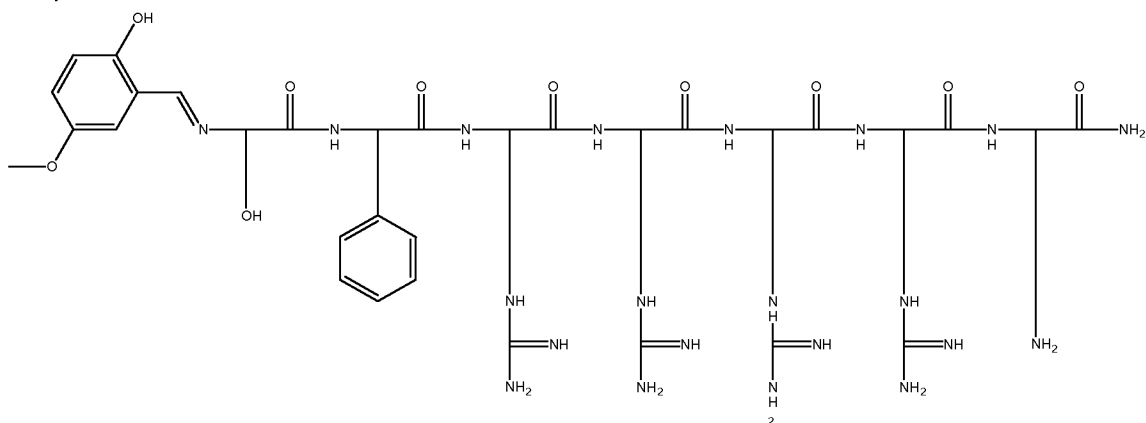


Compound 60

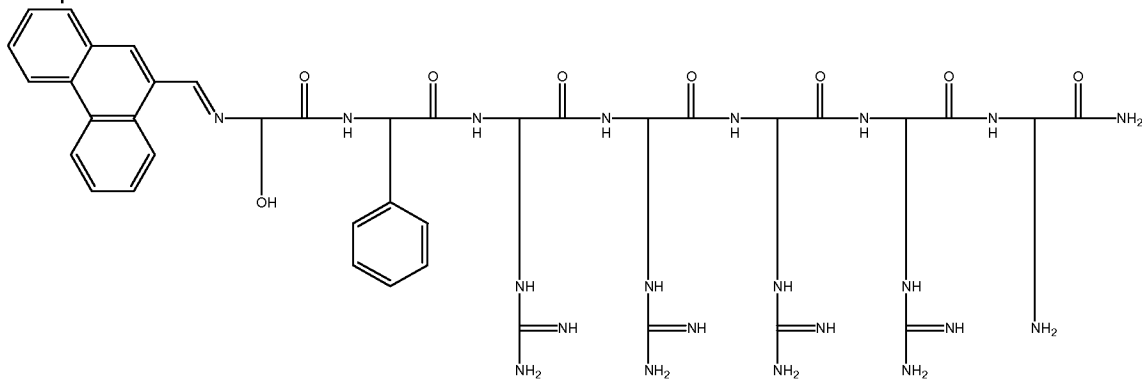
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Compound 61

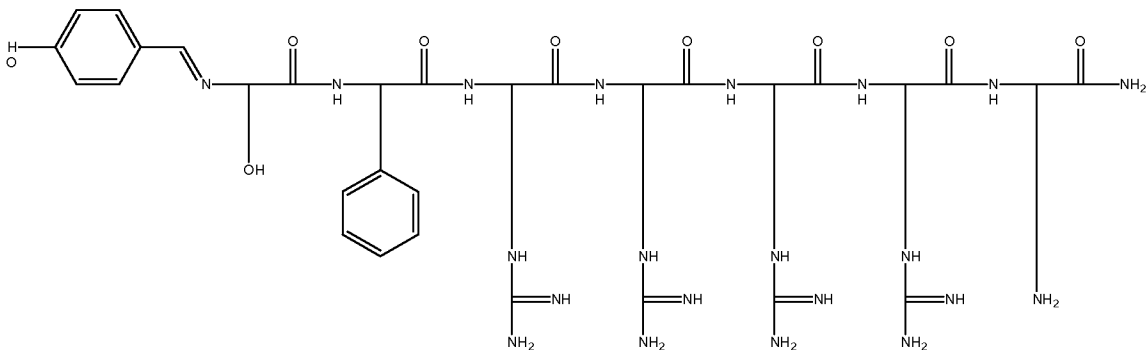


Compound 62

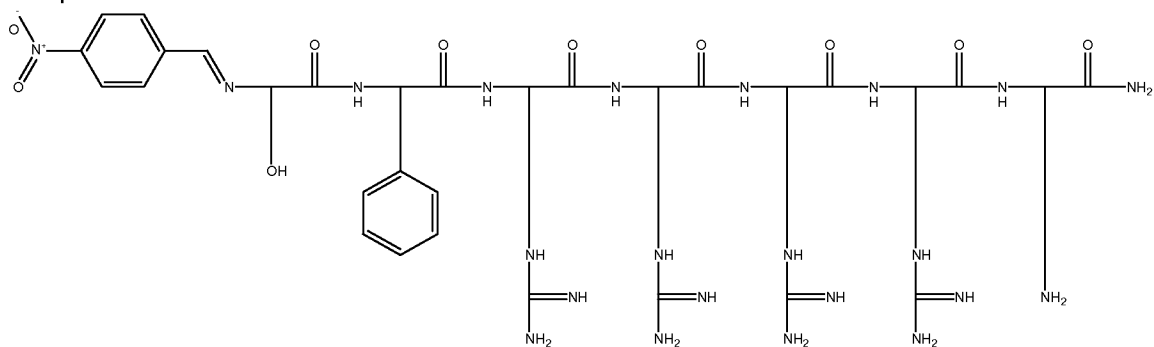


Compound 63

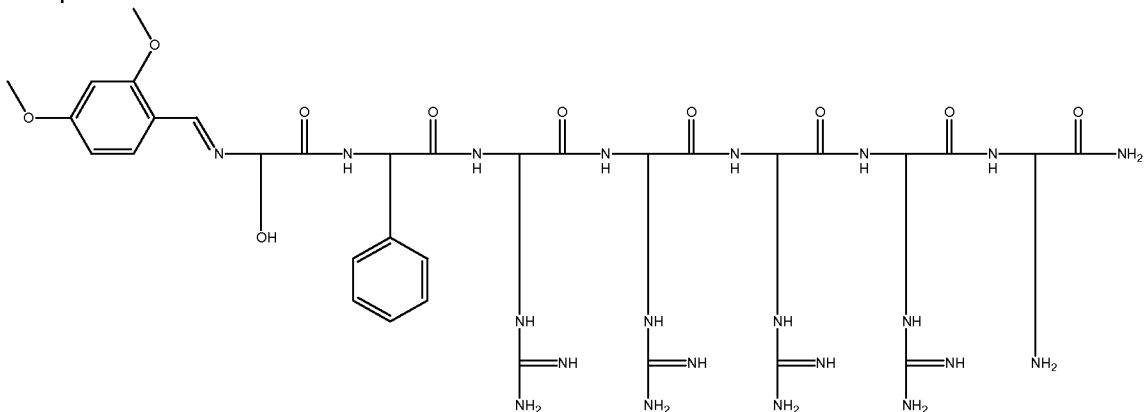
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Compound 64

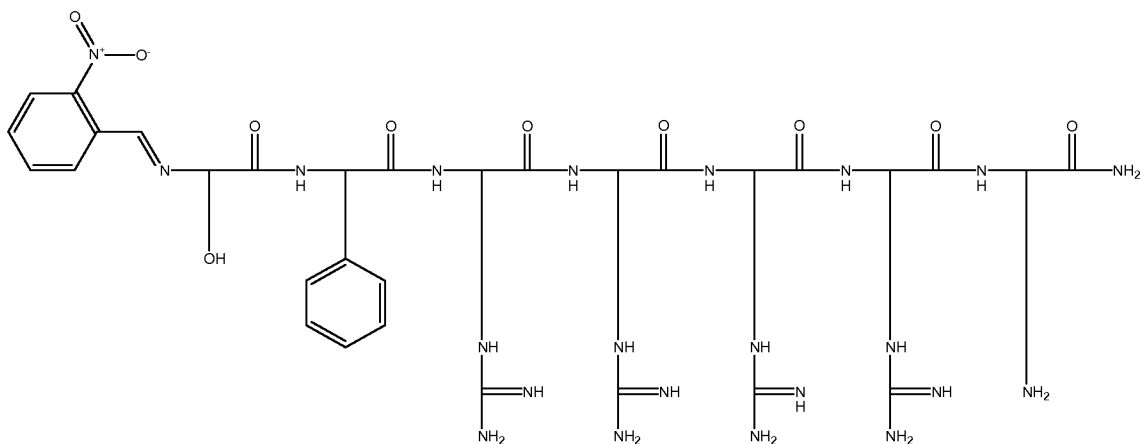


Compound 65

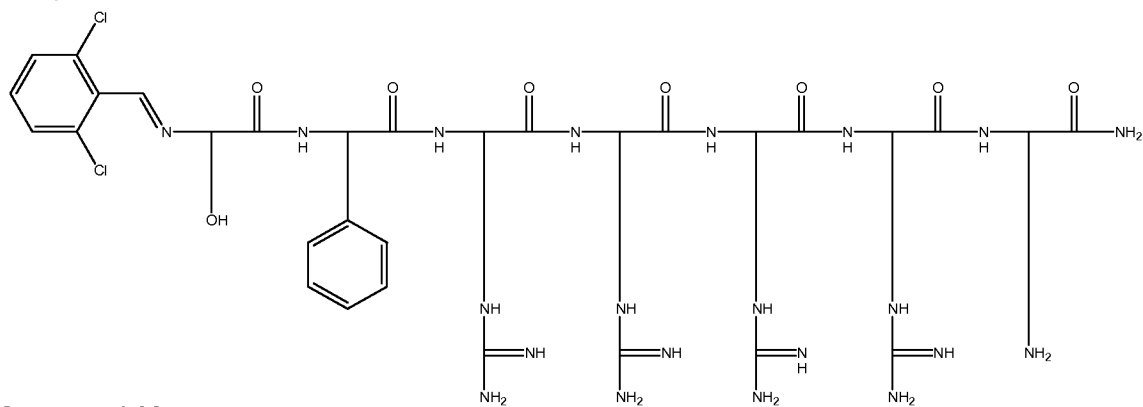


Compound 66

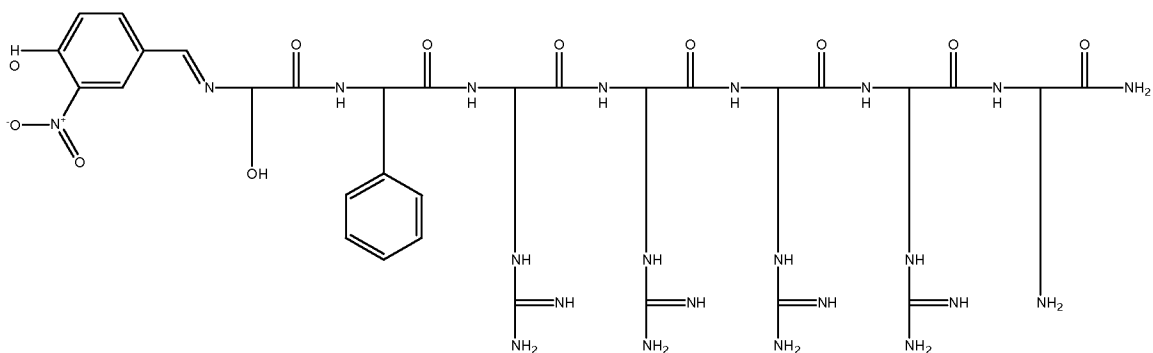
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Compound 67

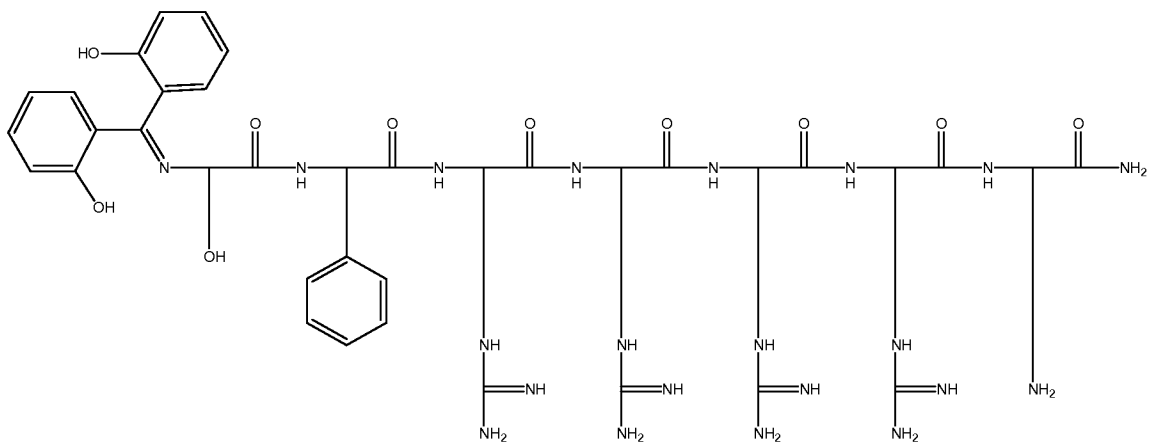


Compound 68

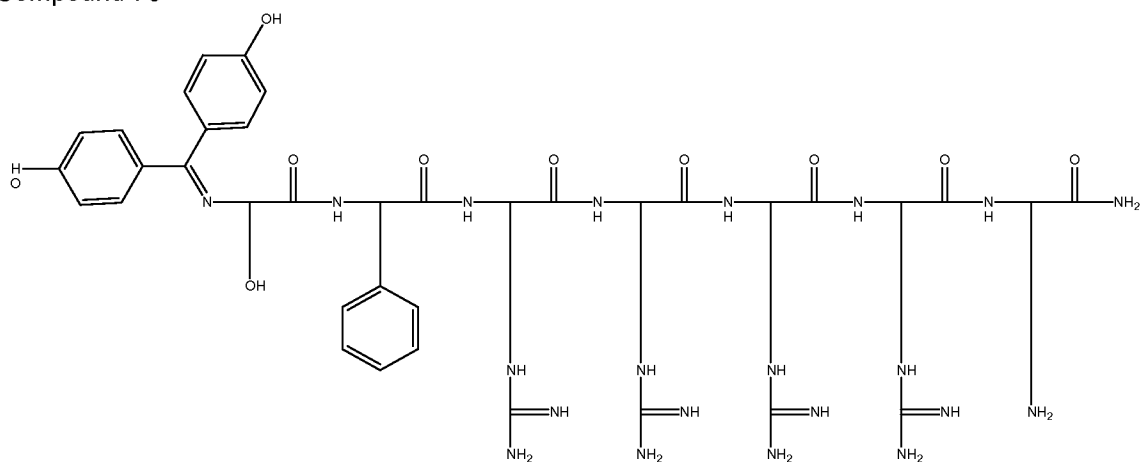


Compound 69

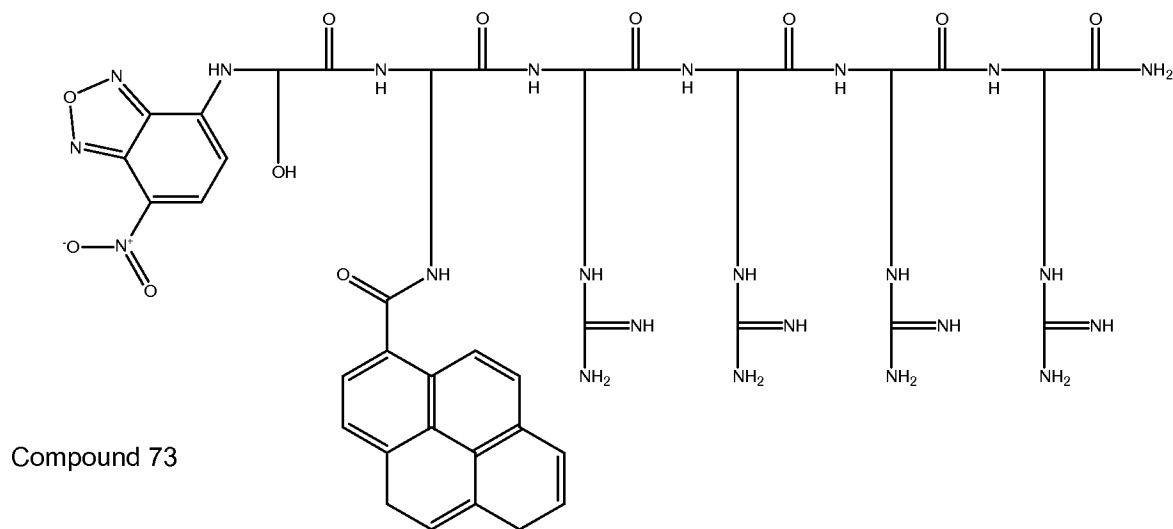
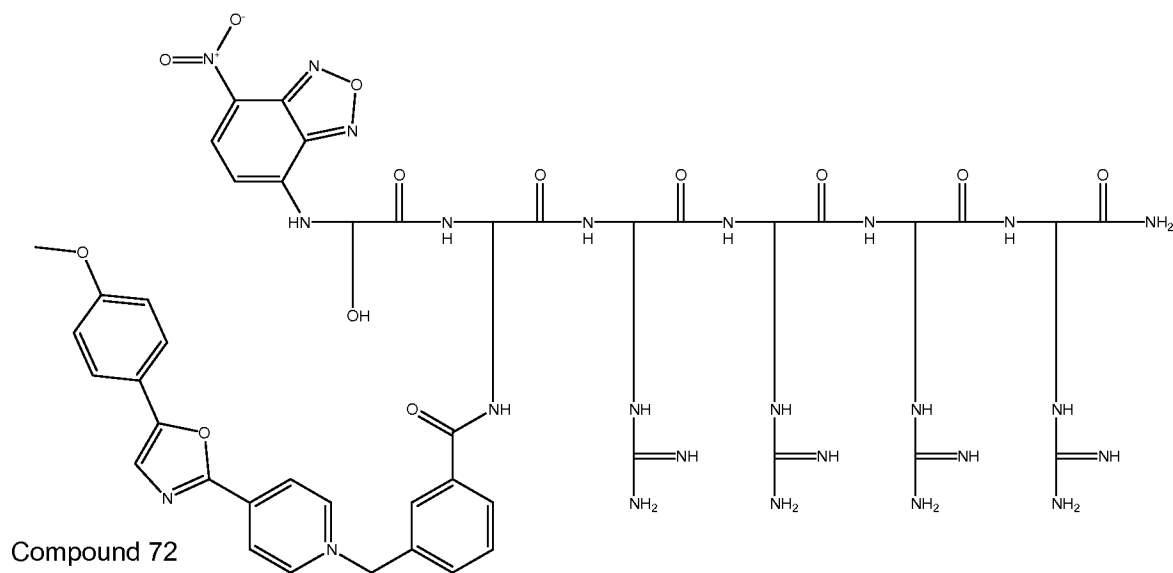
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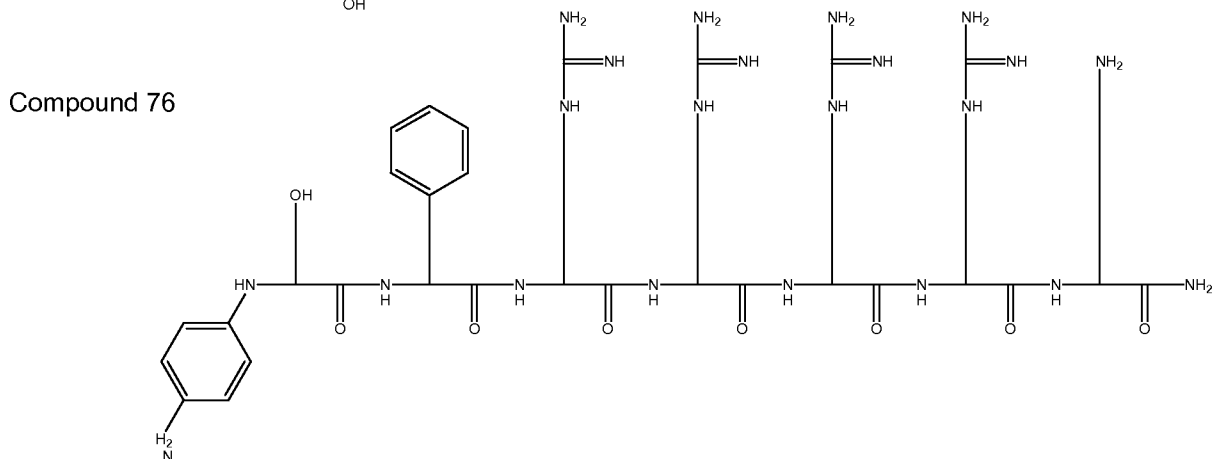
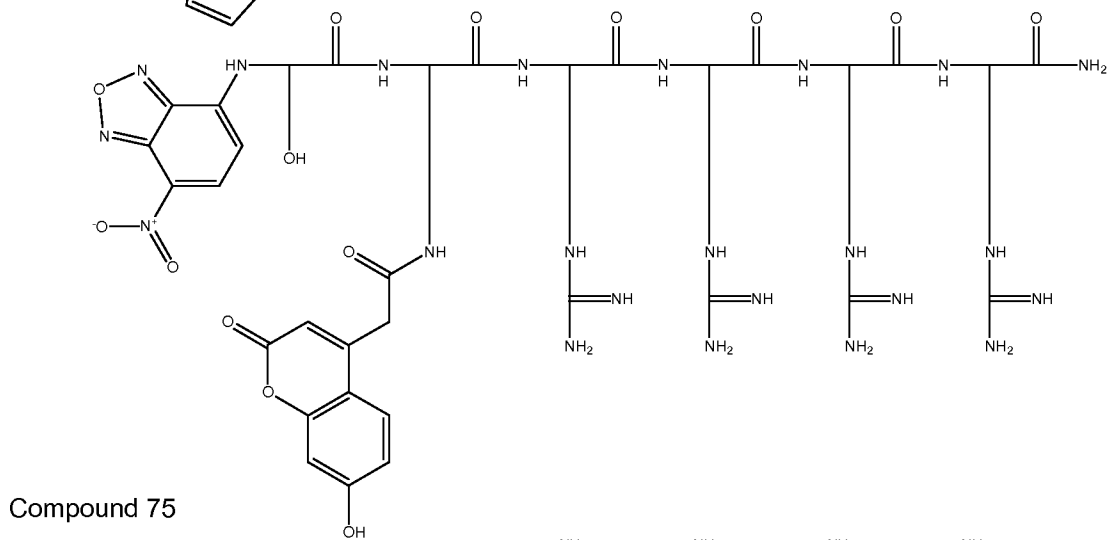
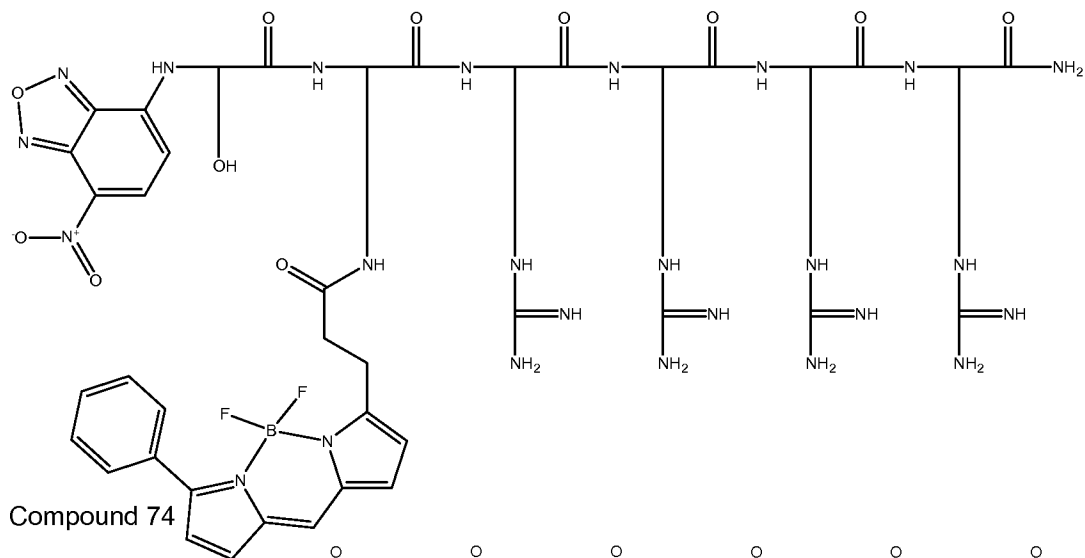


Compound 70

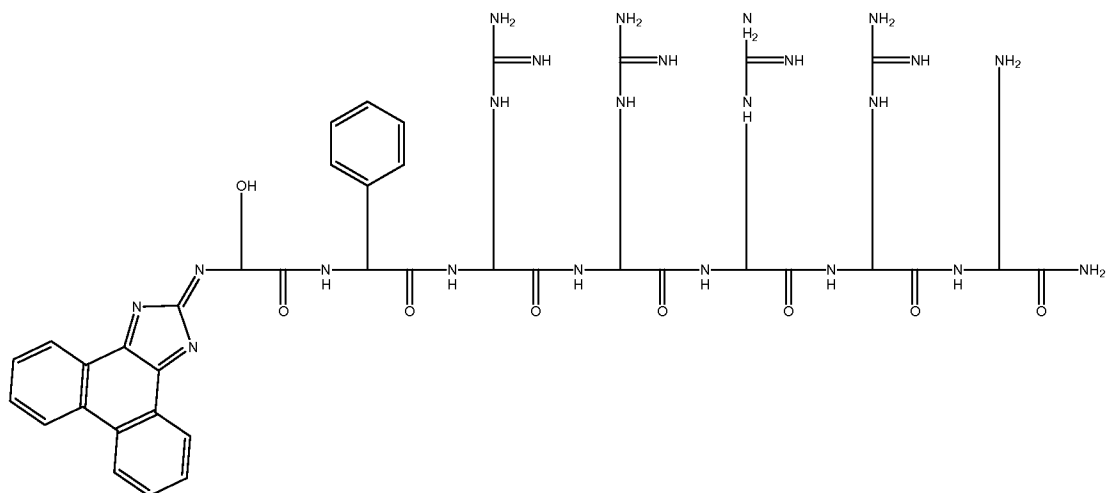


Compound 71

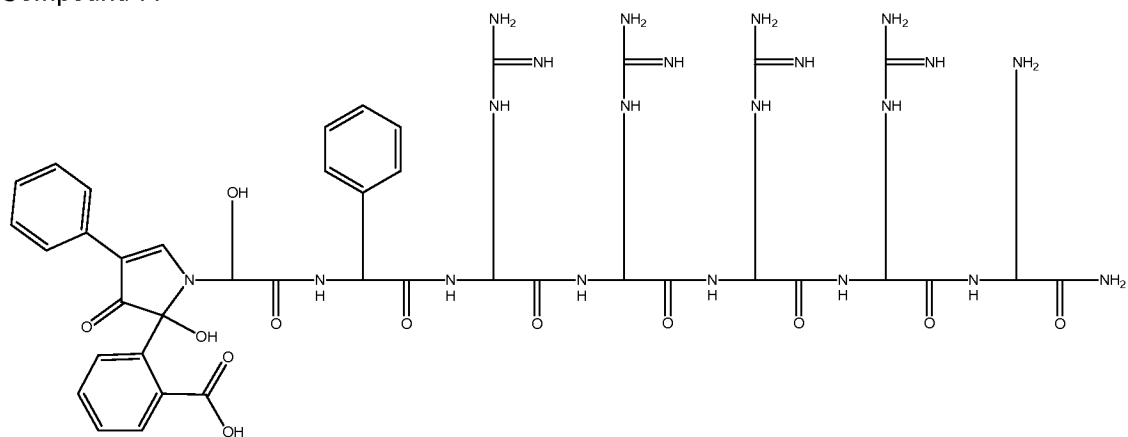




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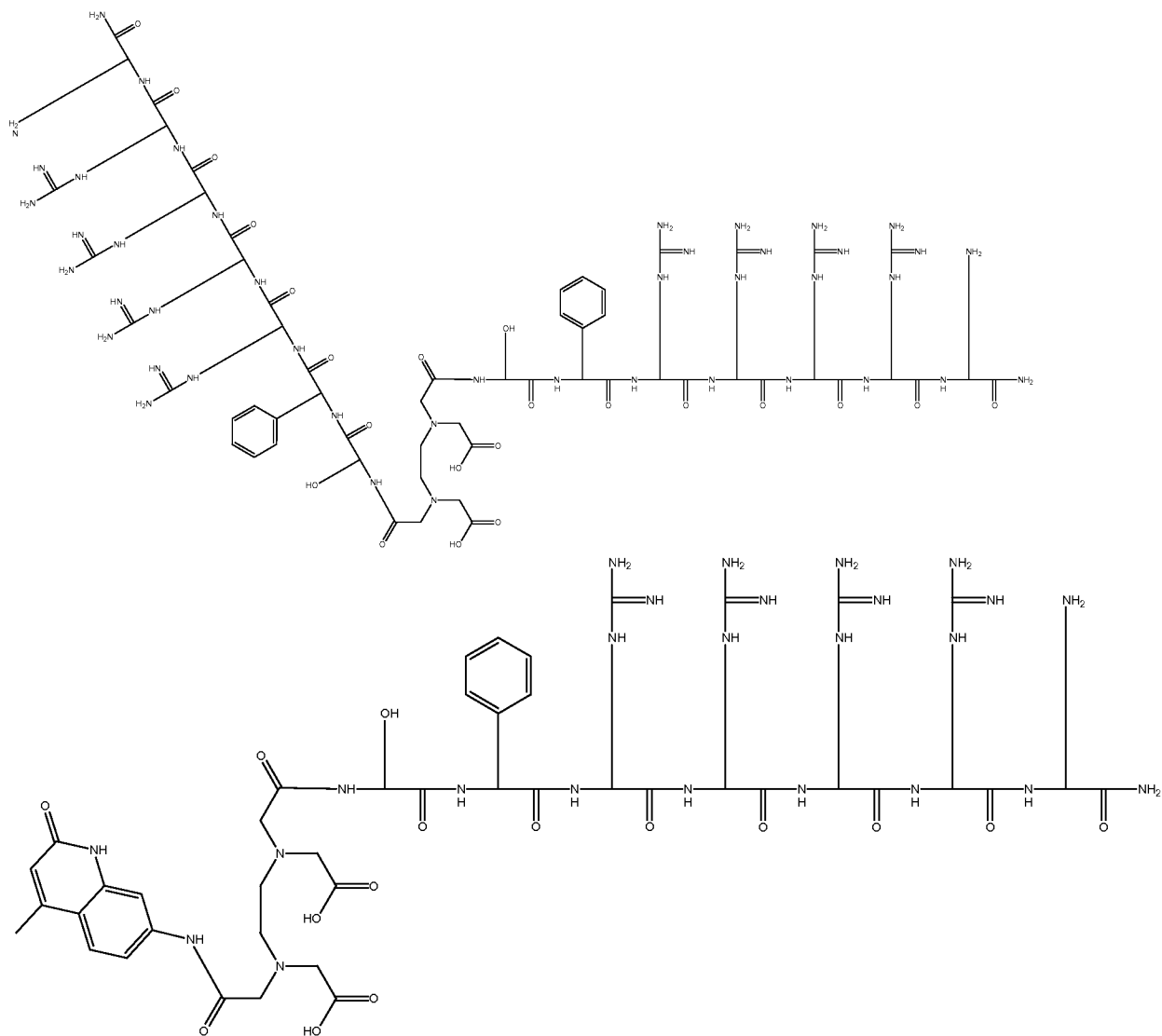
Compound 77



Compound 78

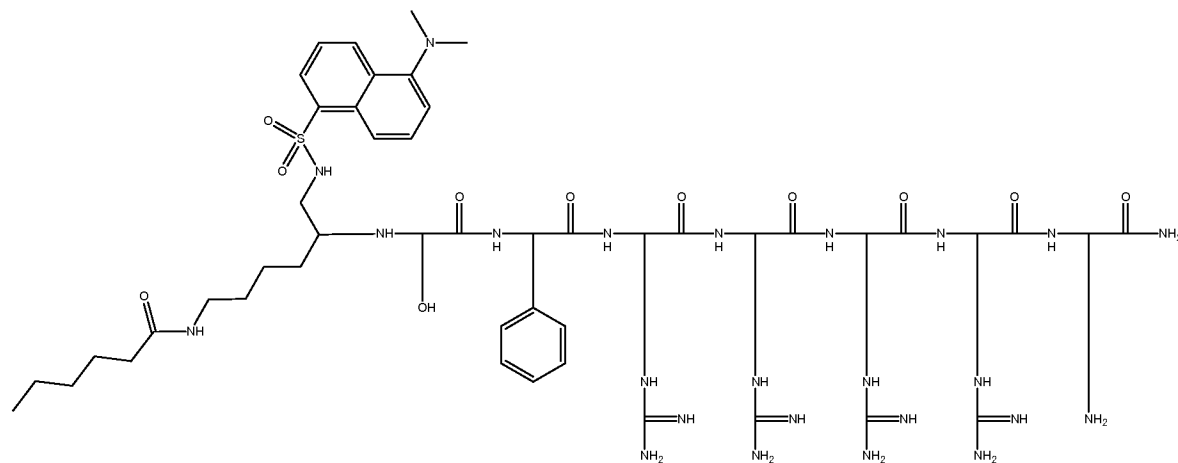
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Compound 79



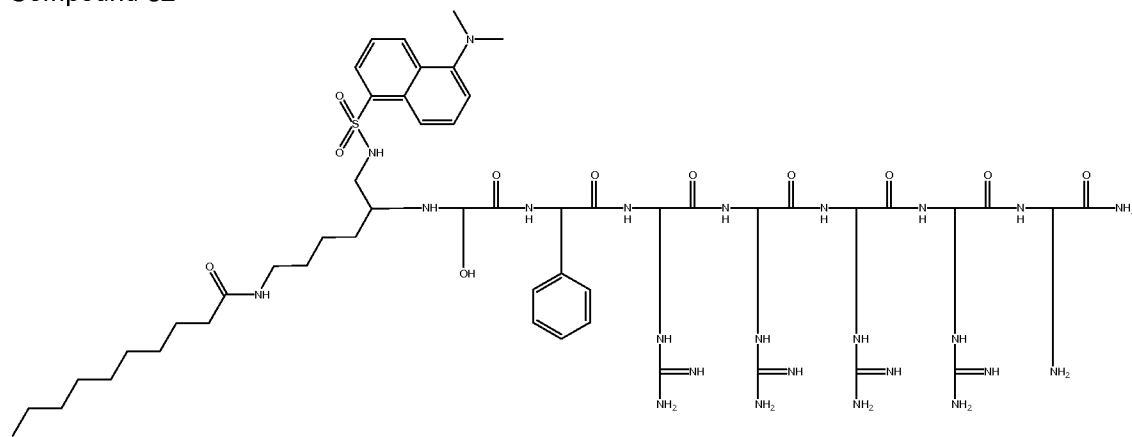
Compound 80

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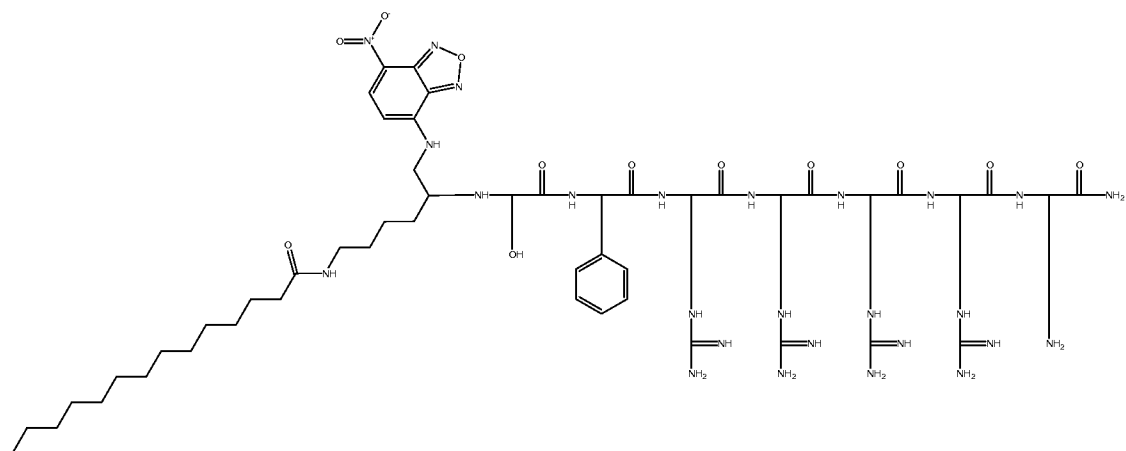


Compound 81

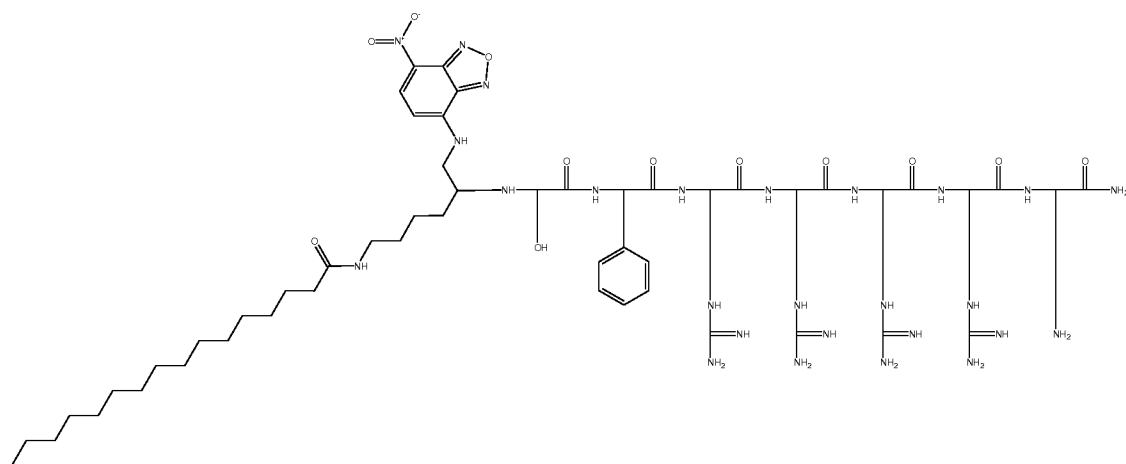
Compound 82



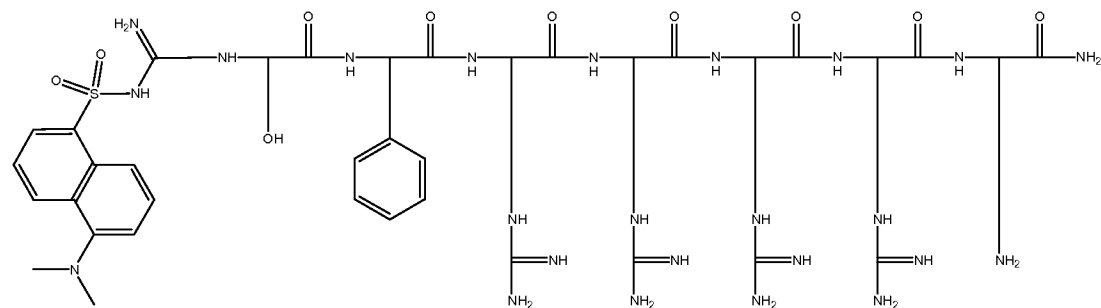
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Compound 83

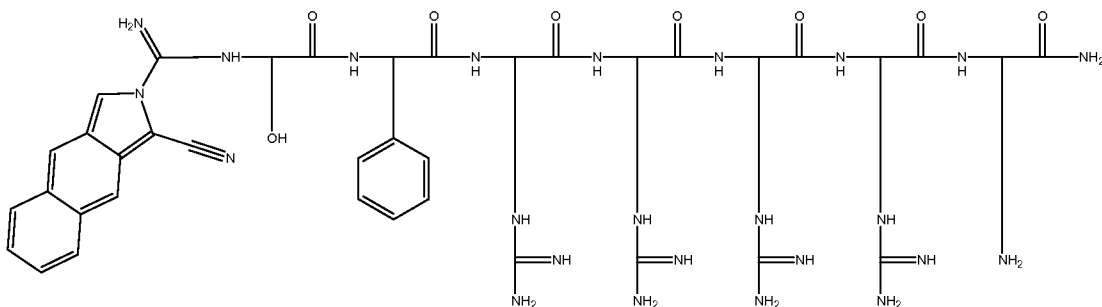


Compound 84

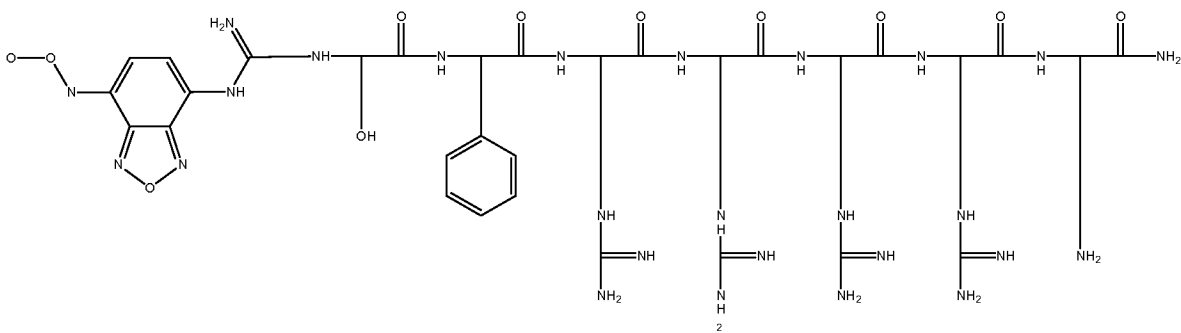


Compound 85

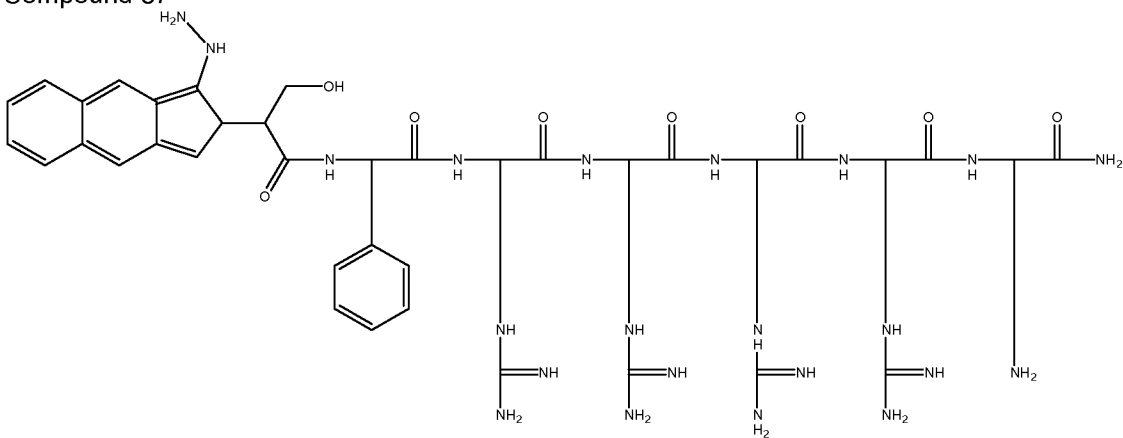
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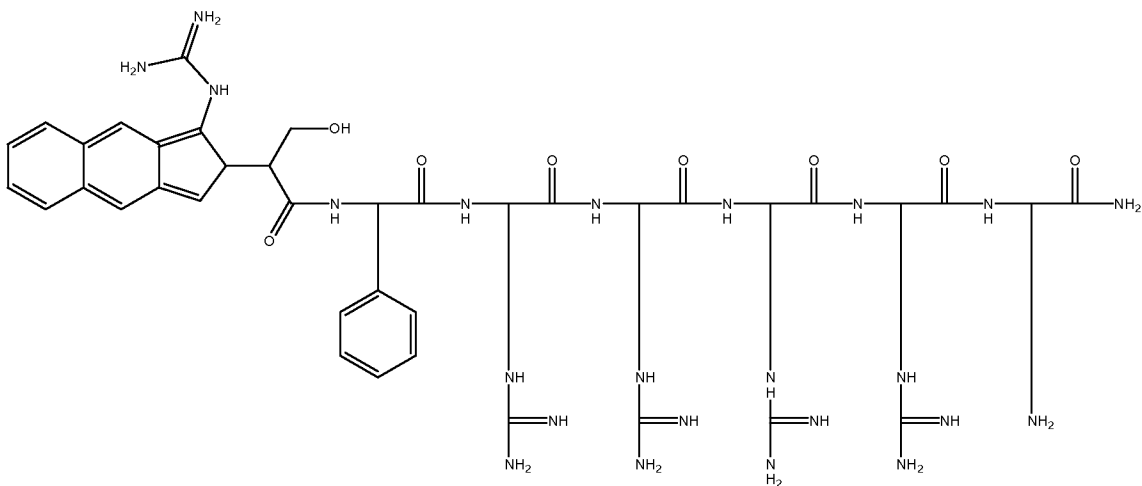
Compound 86



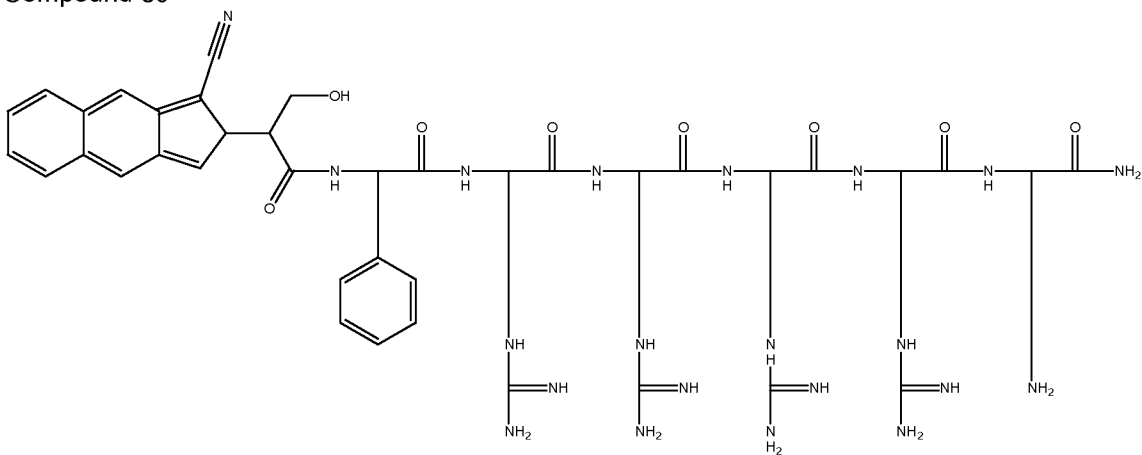
Compound 87



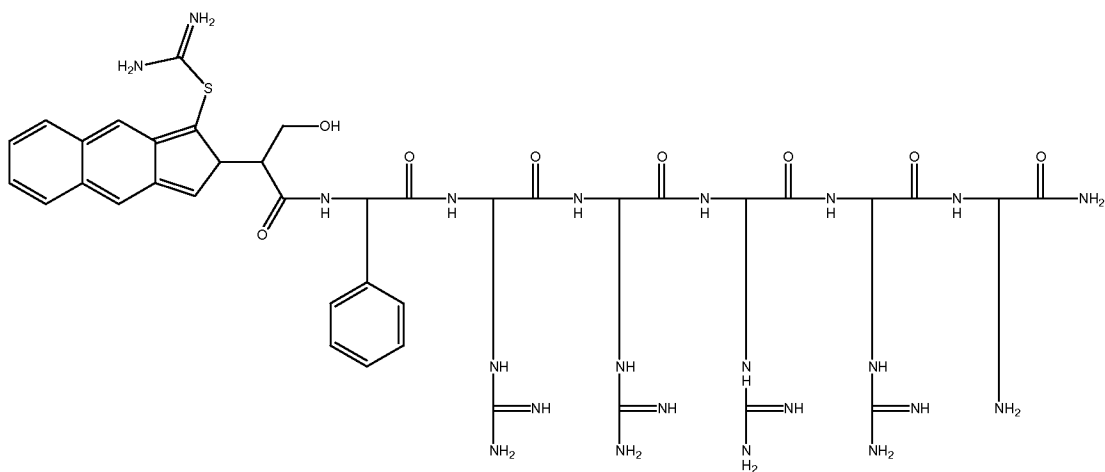
Compound 88



Compound 89

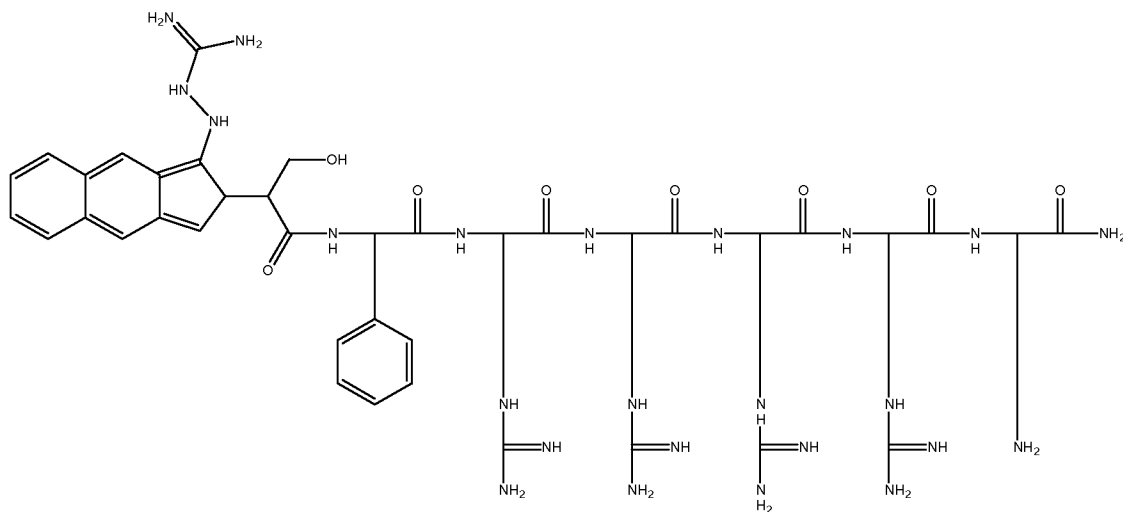


Compound 90

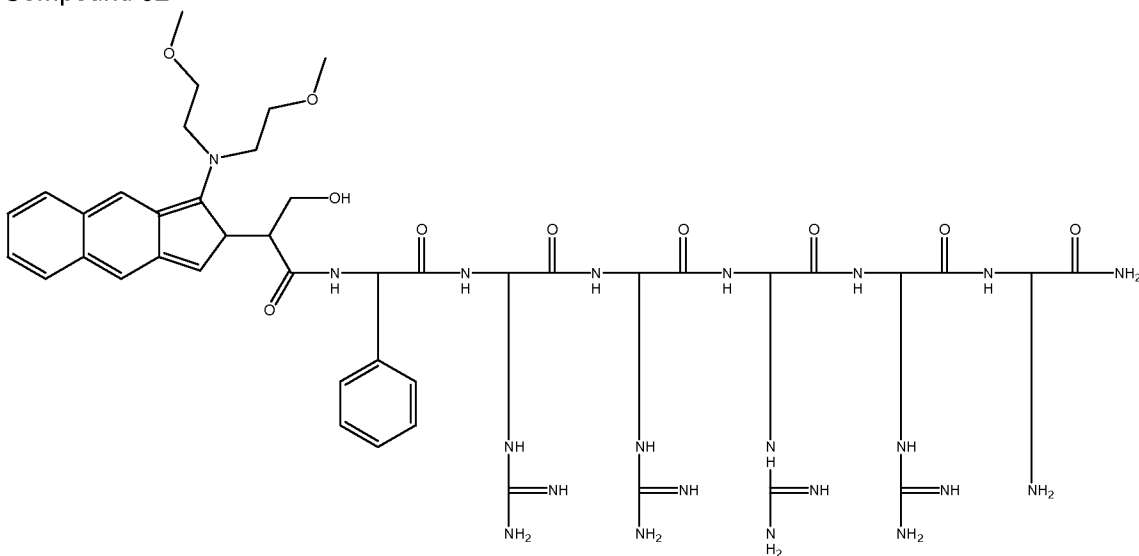


Compound 91

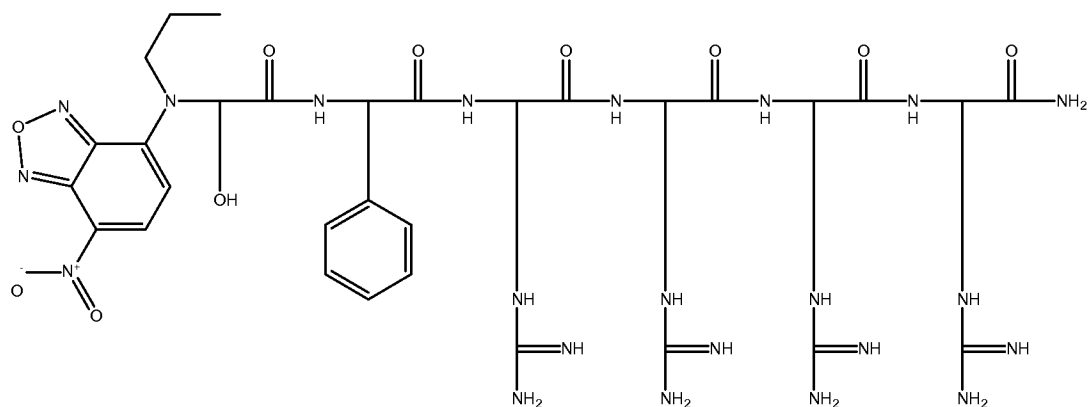
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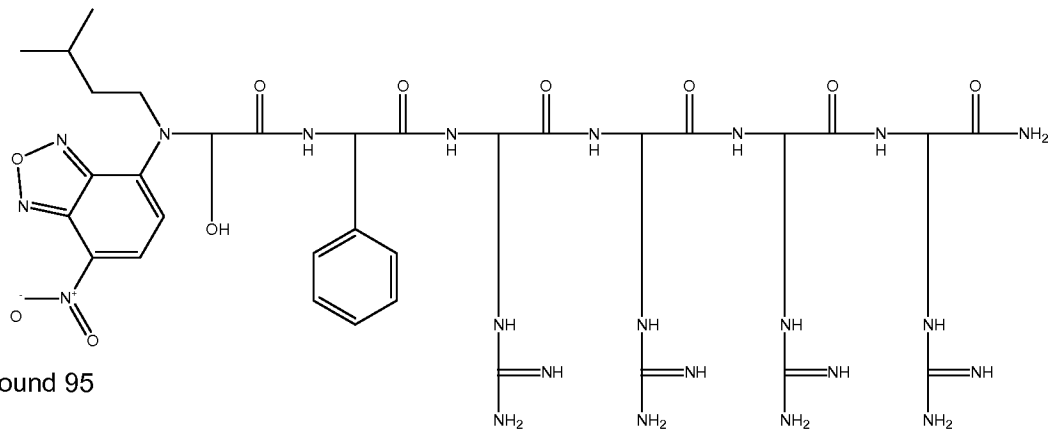
Compound 92



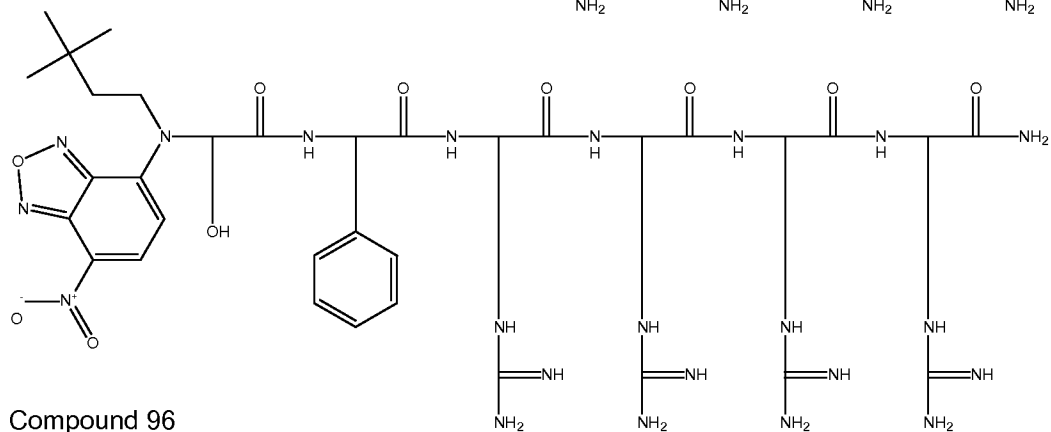
Compound 93



Compound 94

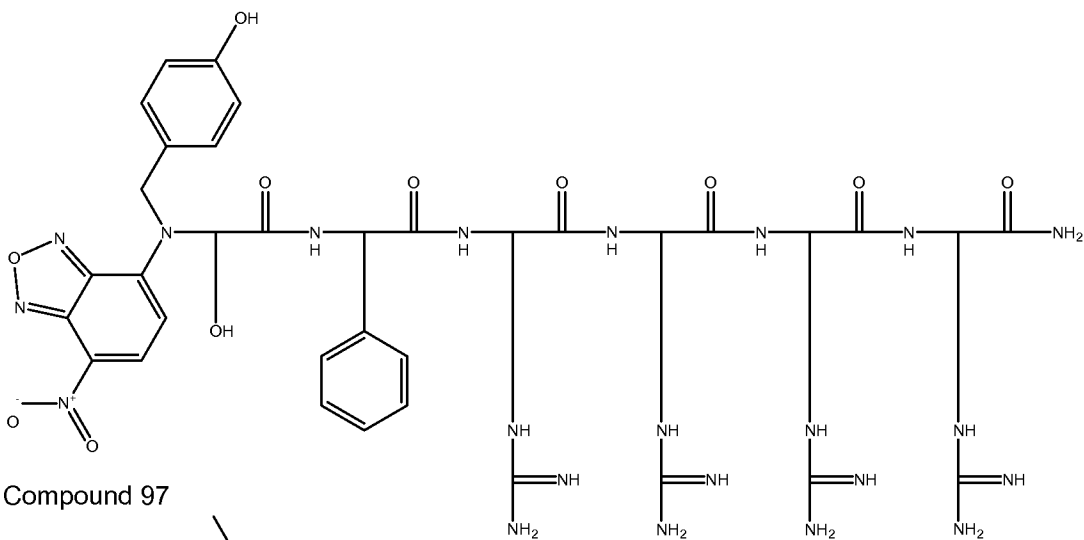


Compound 95

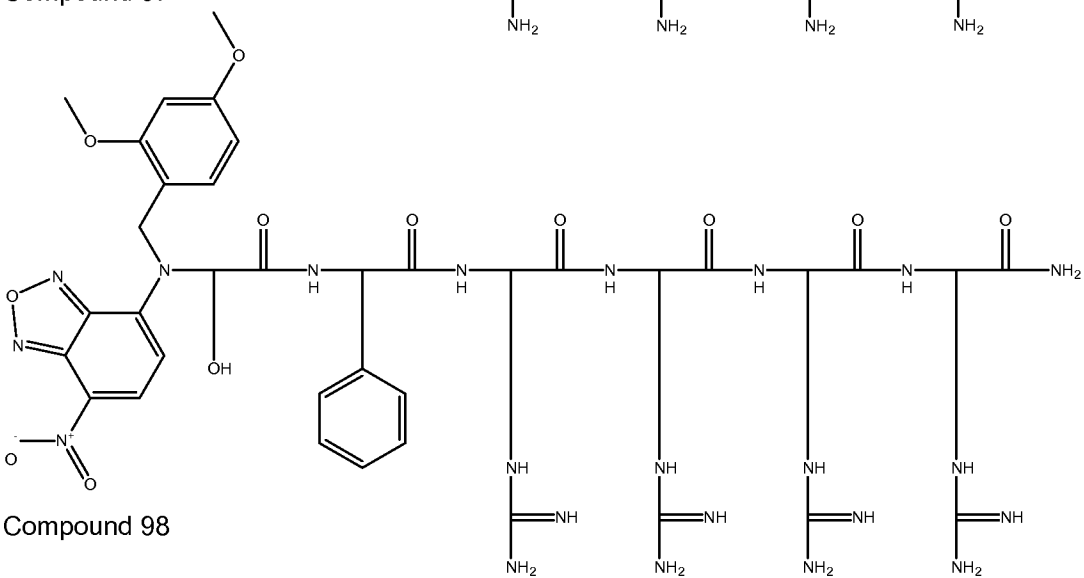


Compound 96

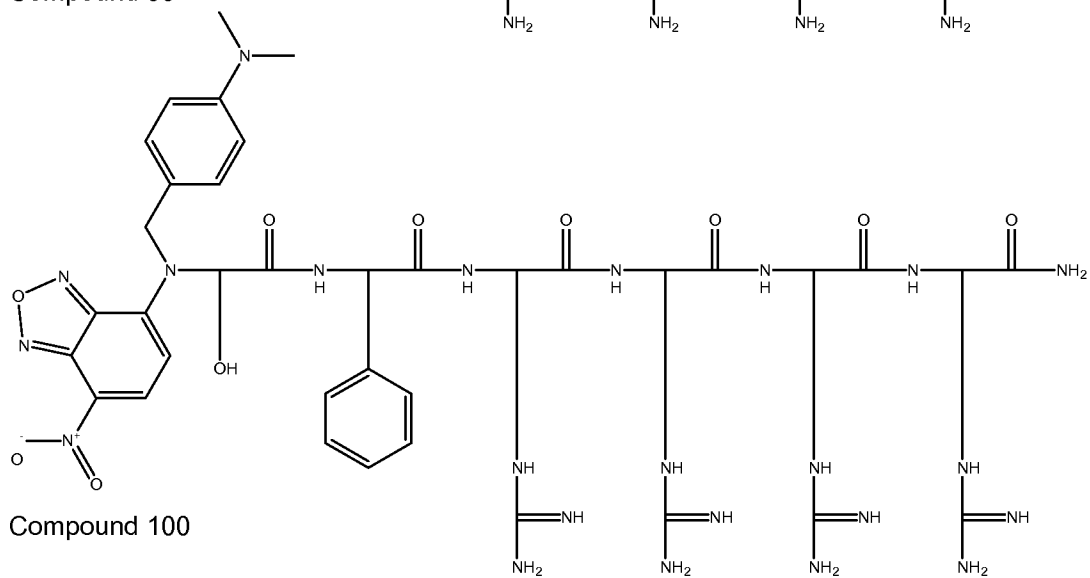
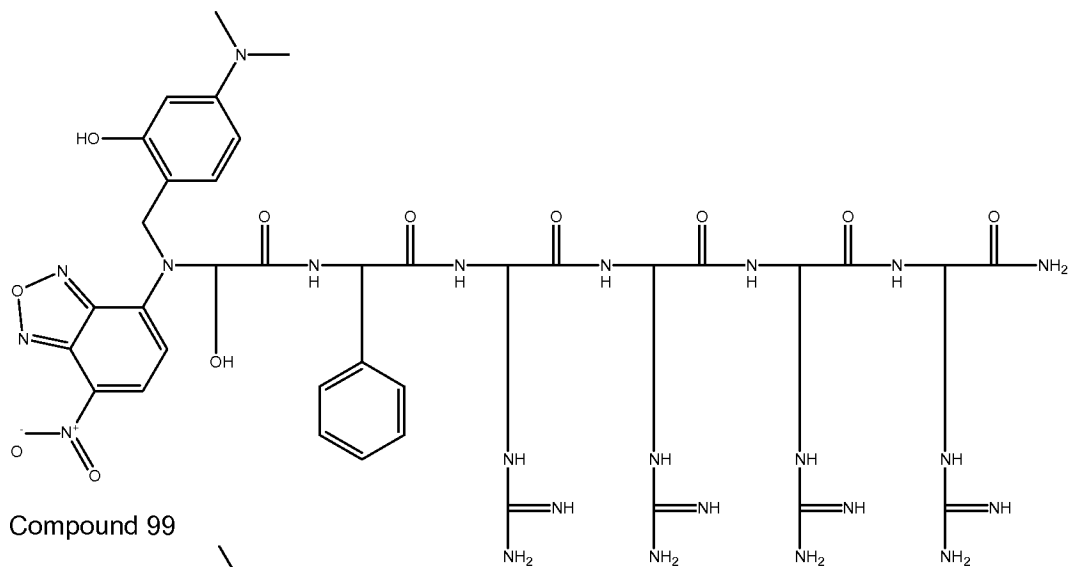
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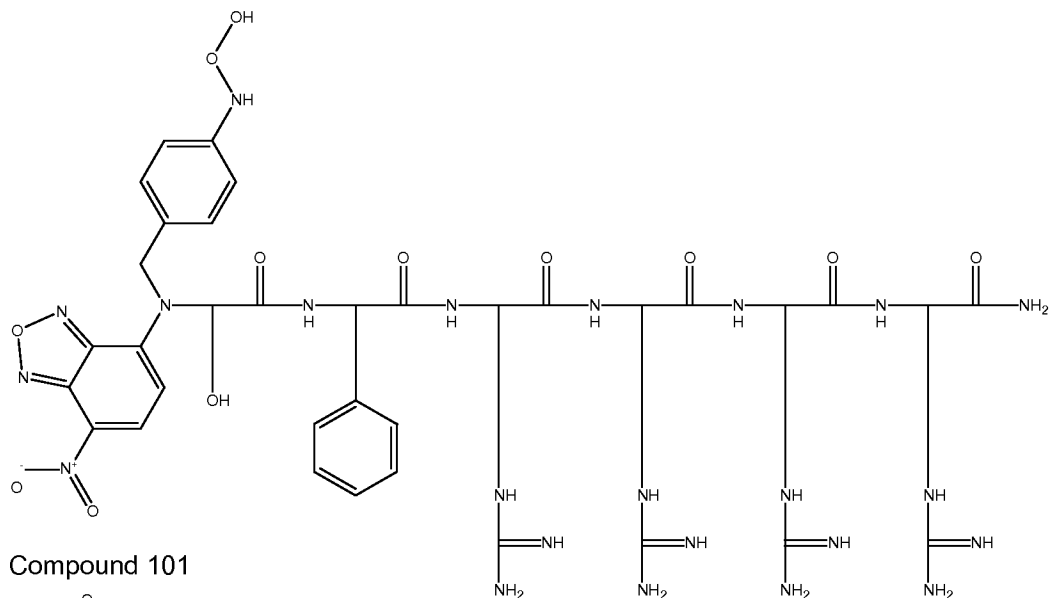


Compound 97

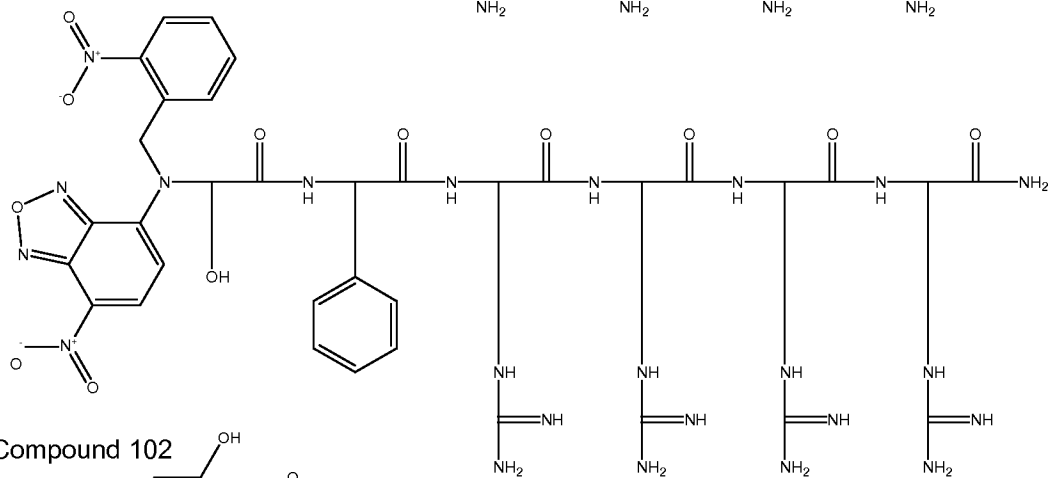


Compound 98

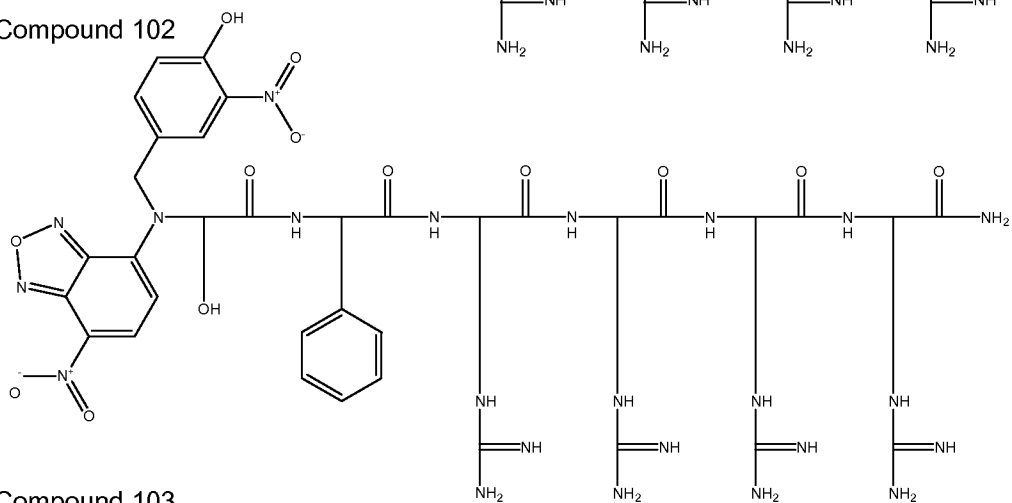




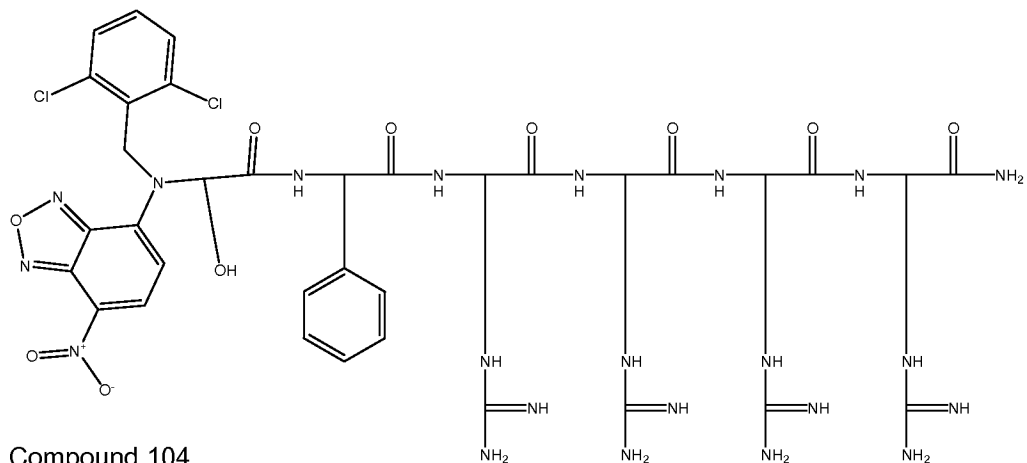
Compound 101



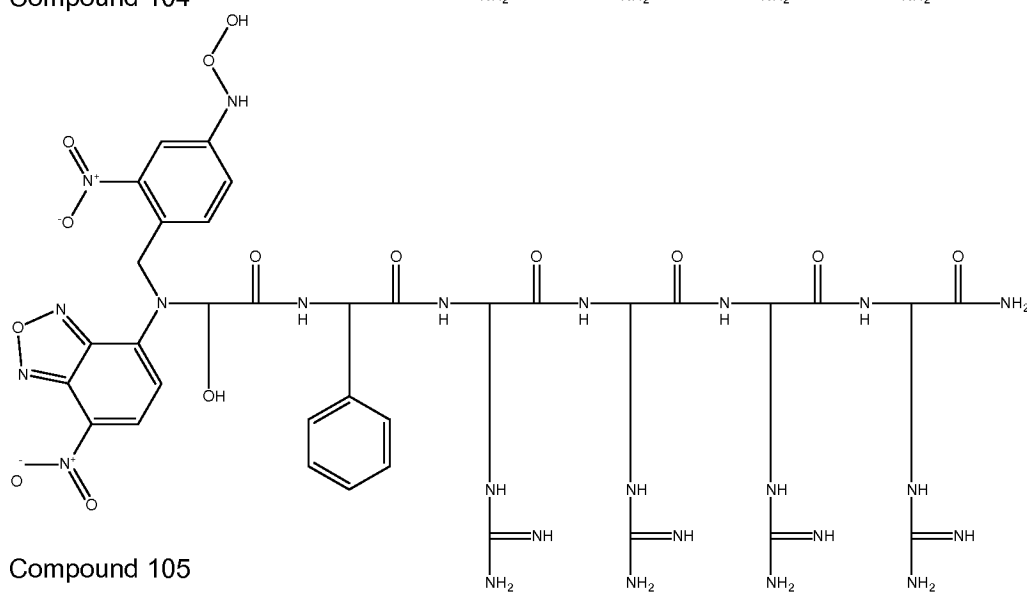
Compound 102



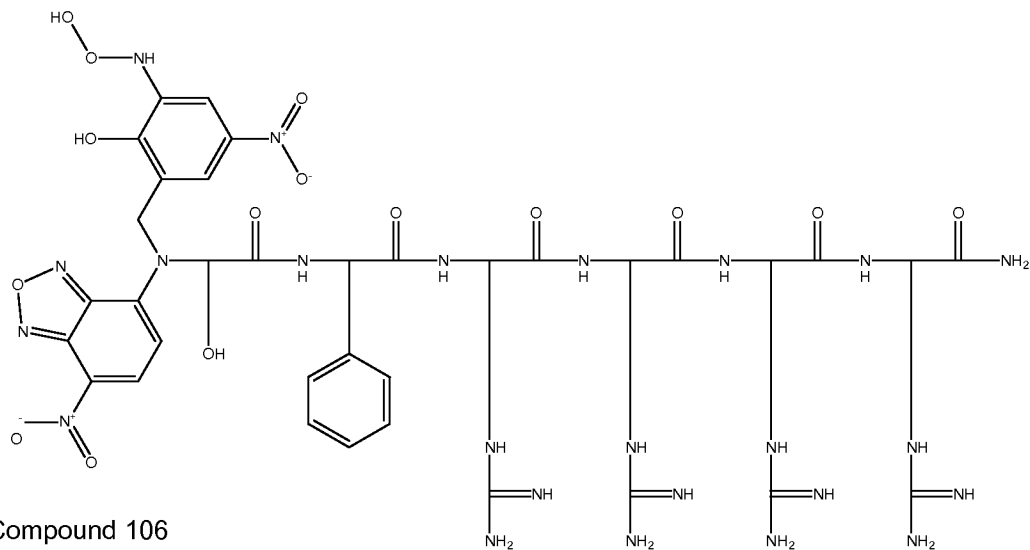
Compound 103



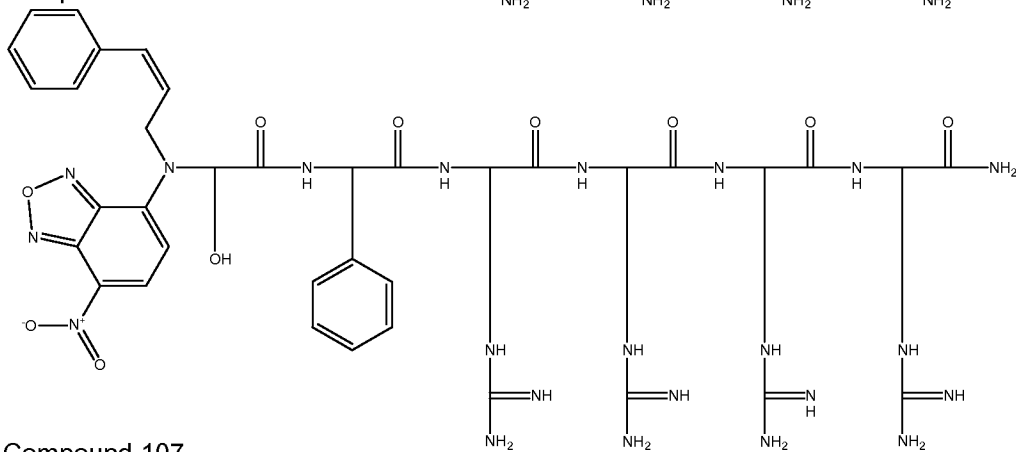
Compound 104



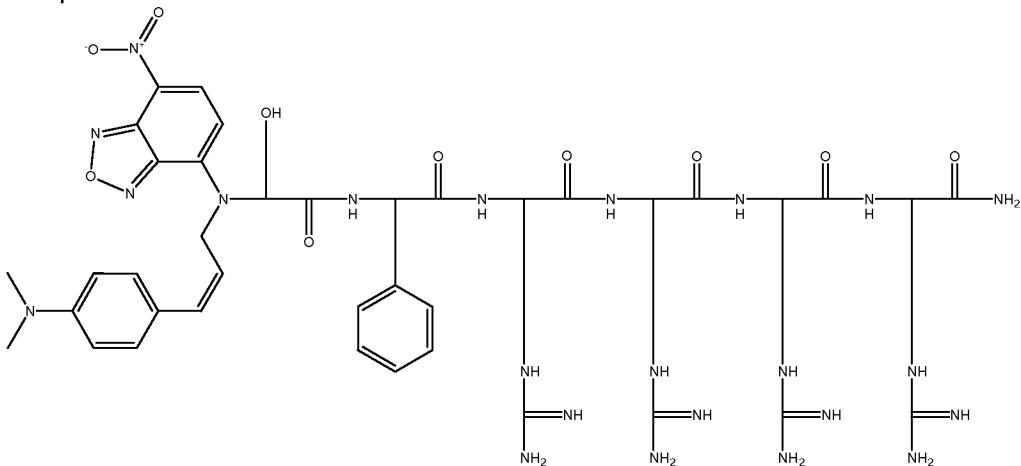
Compound 105



Compound 106

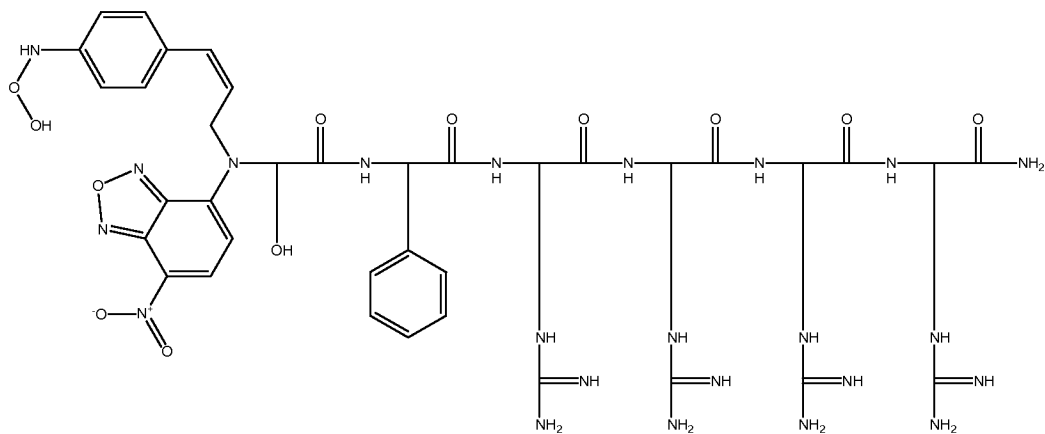


Compound 107

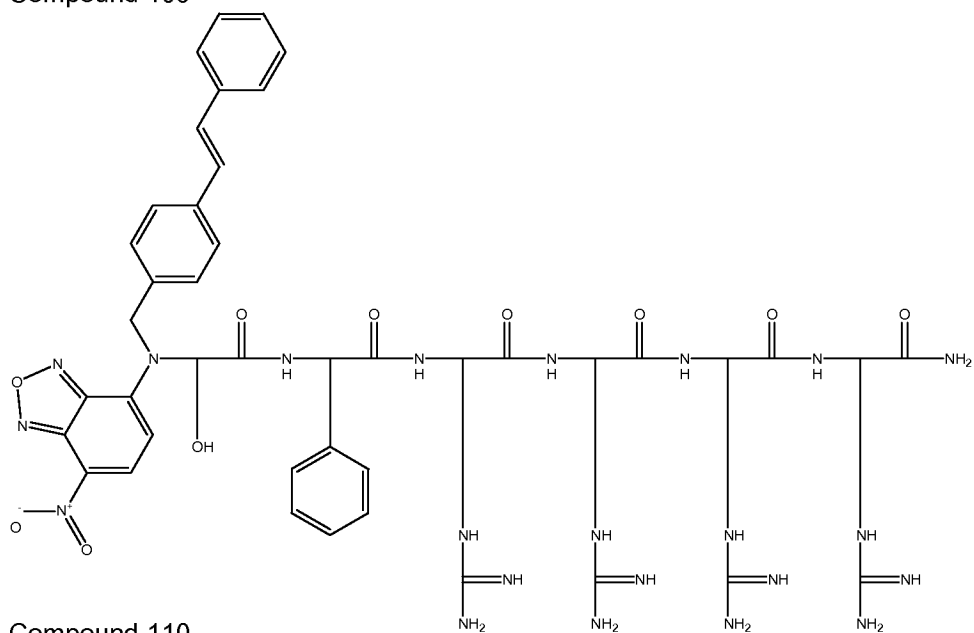


Compound 108

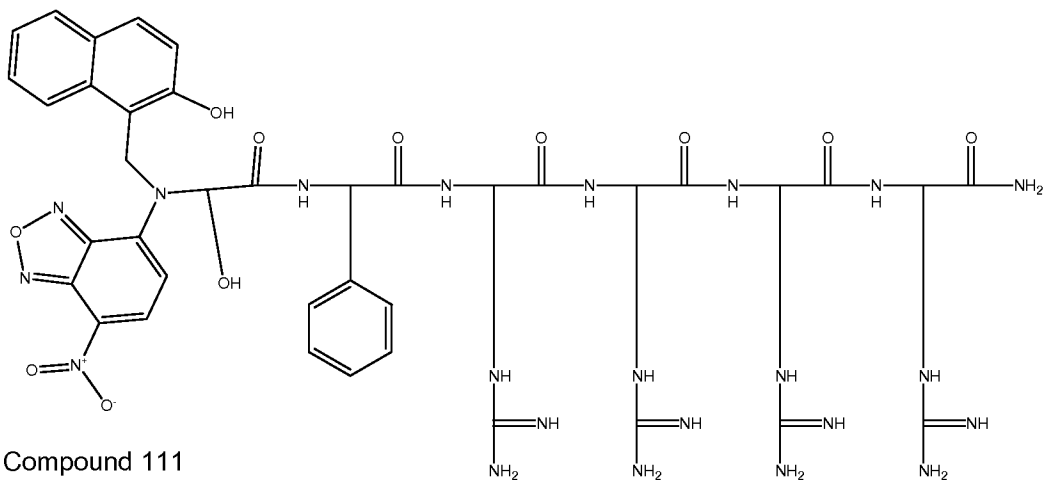
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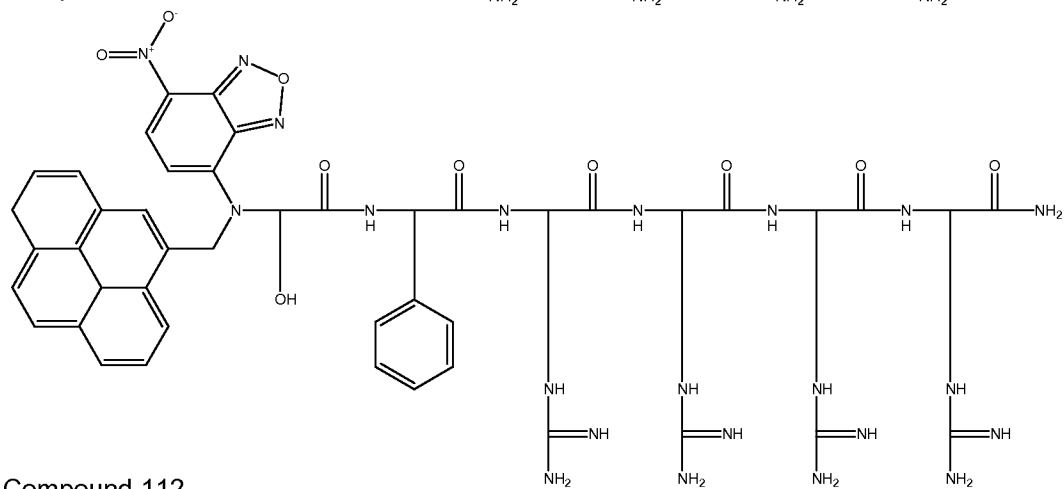
Compound 109



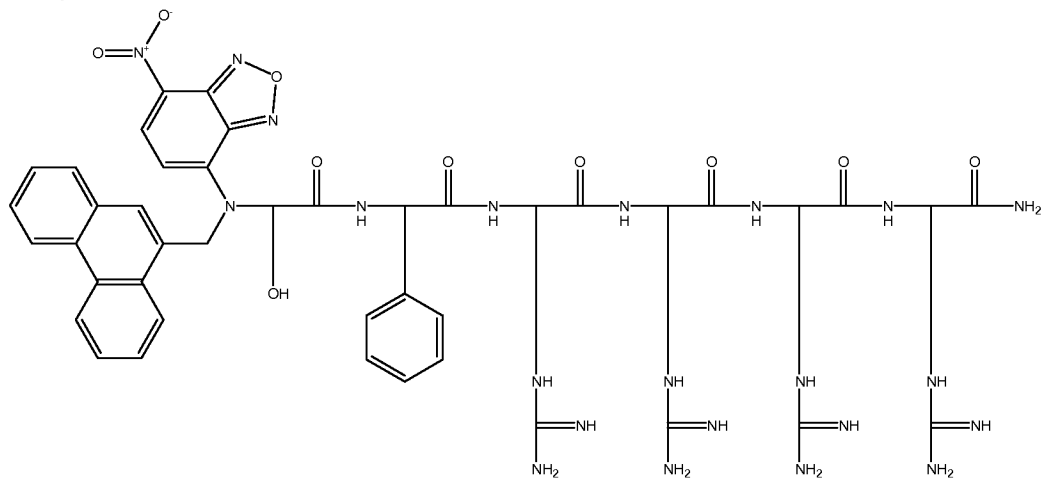
Compound 110



Compound 111



Compound 112

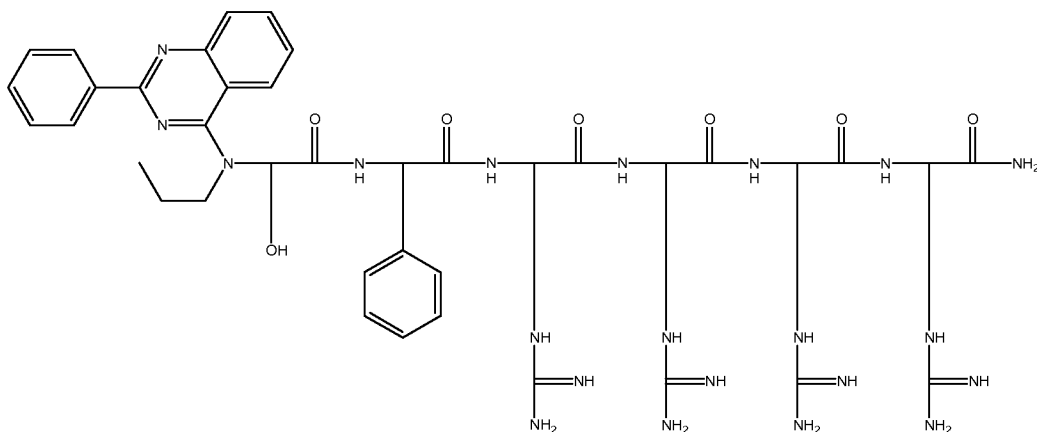


Compound 113

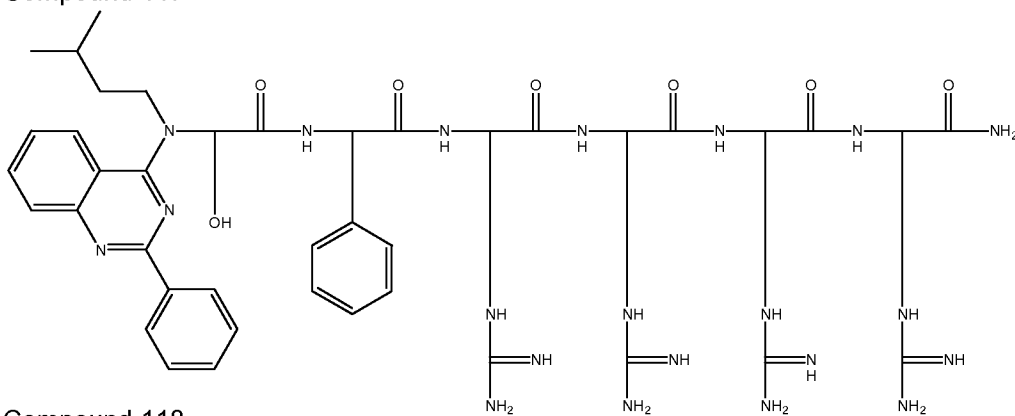
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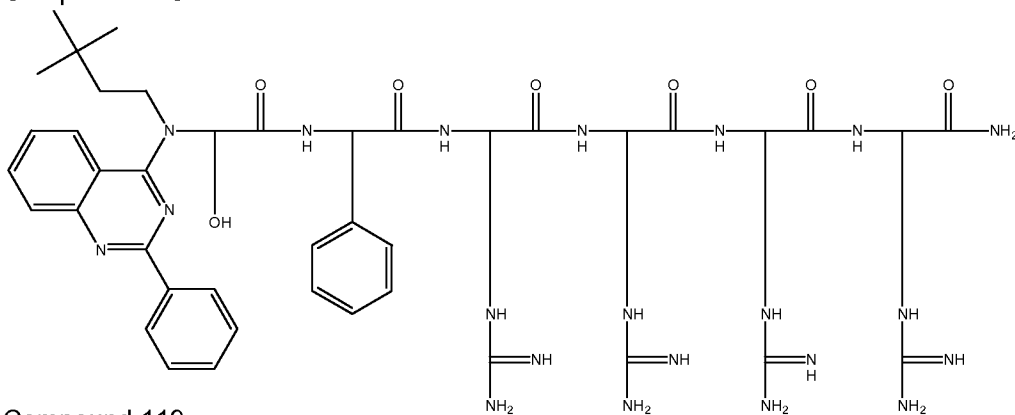
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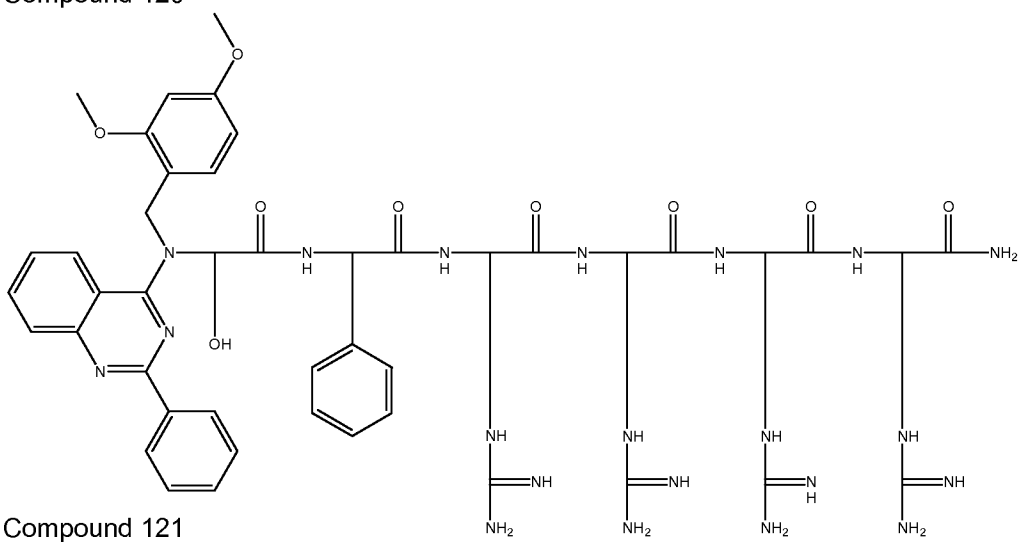
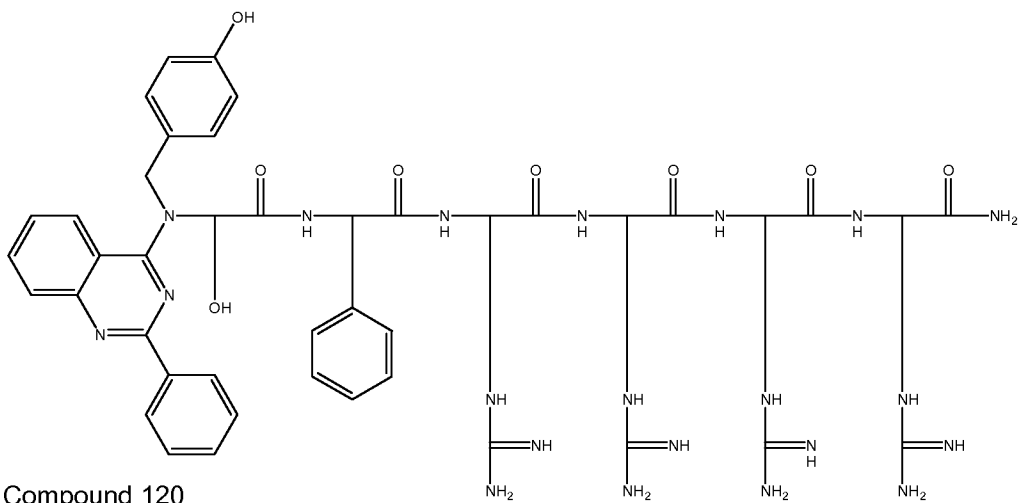
Compound 117

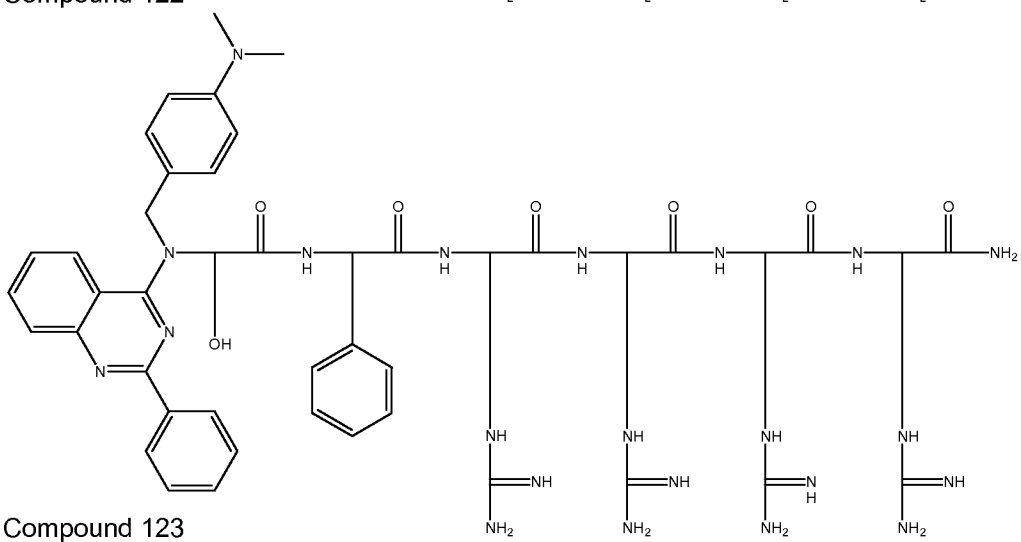
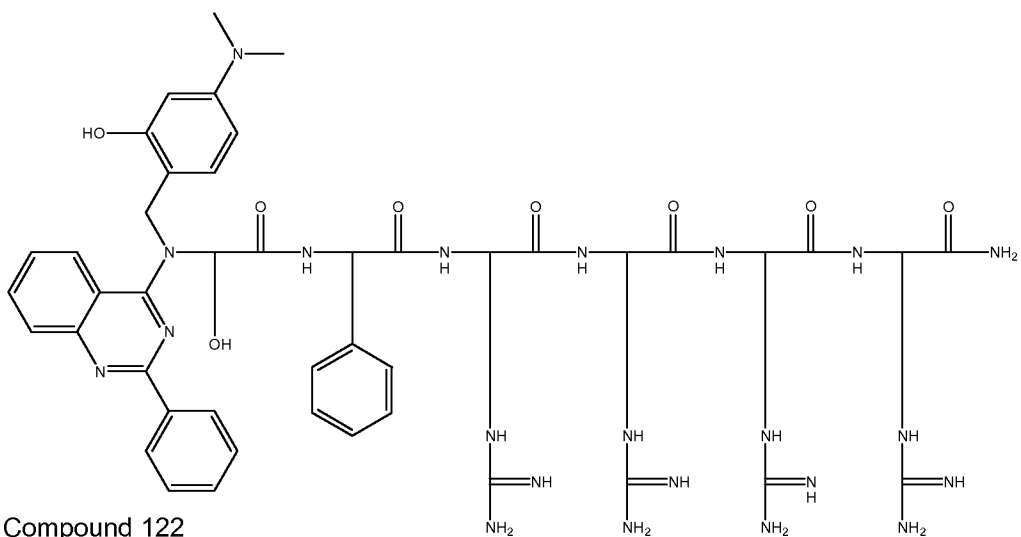


Compound 118

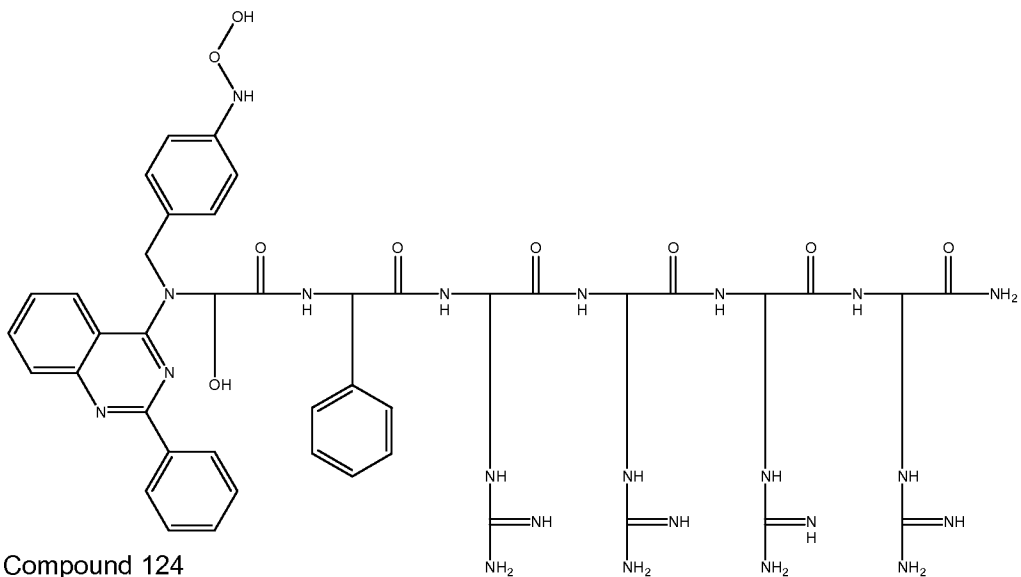


Compound 119

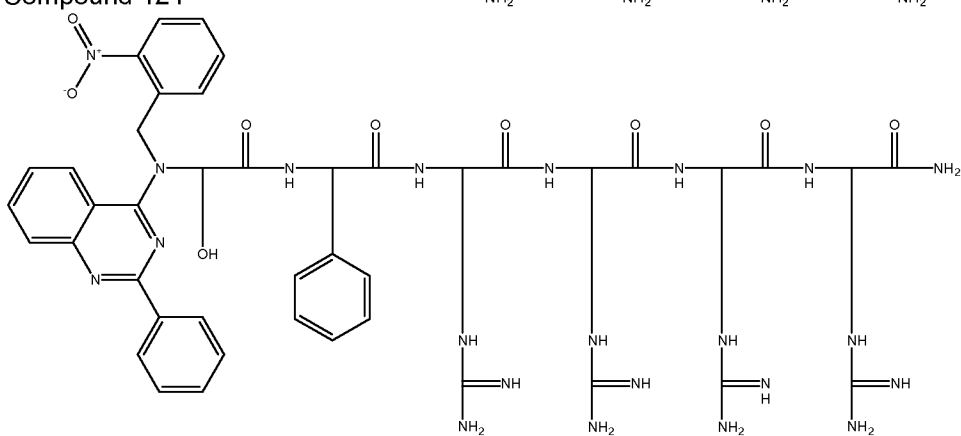




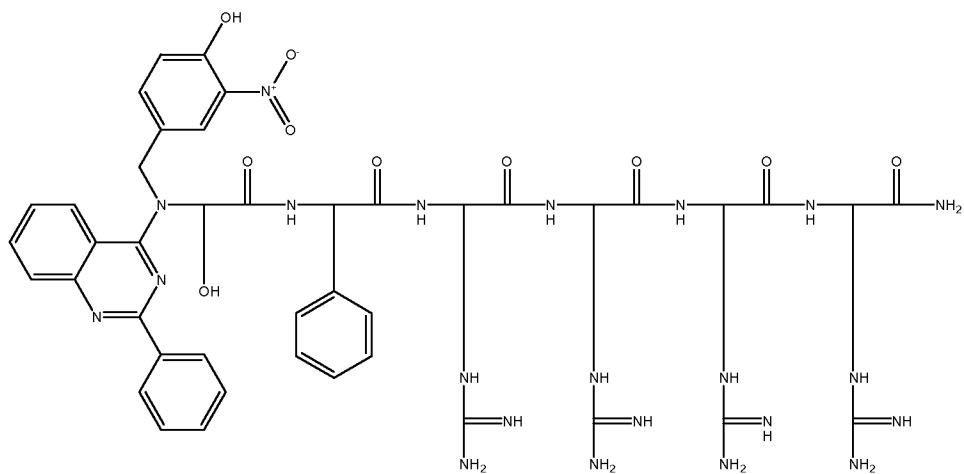
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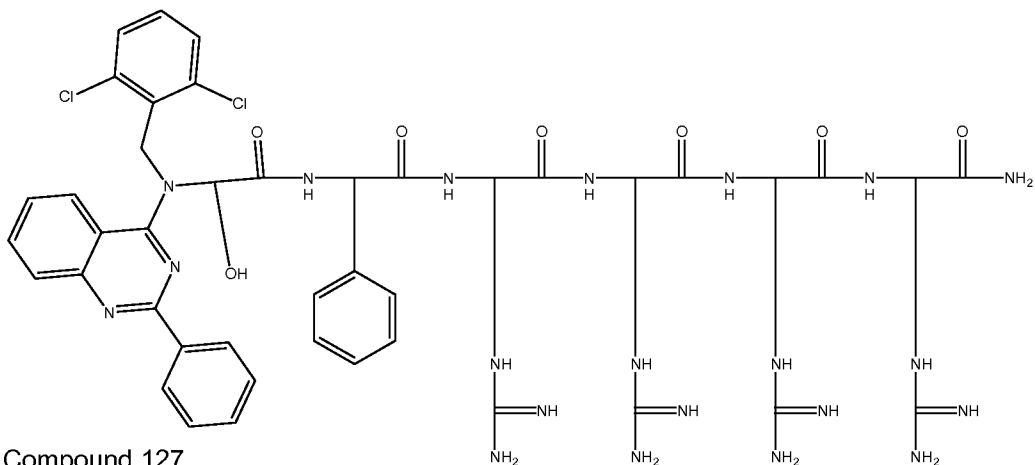


Compound 124

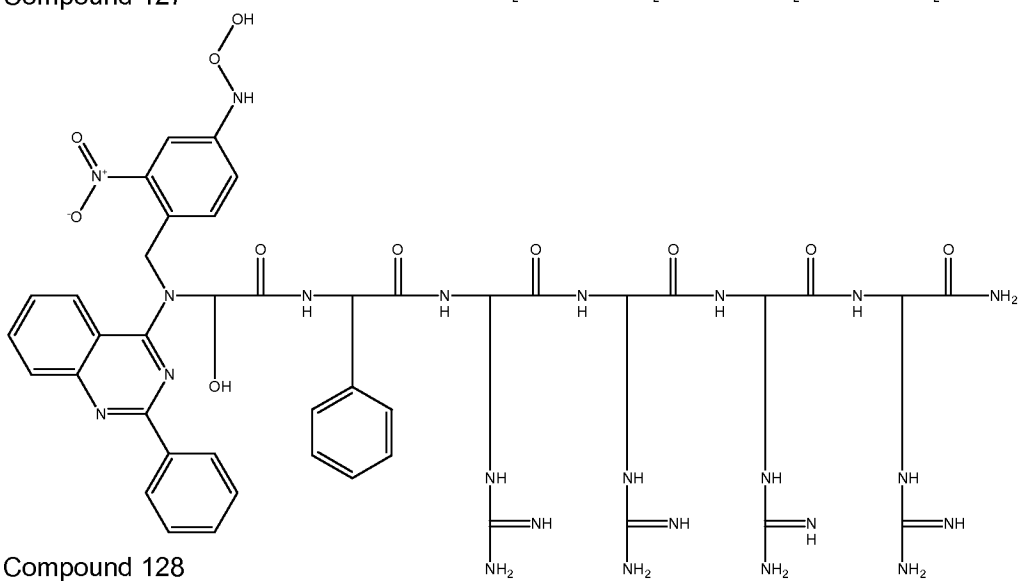


Compound 125



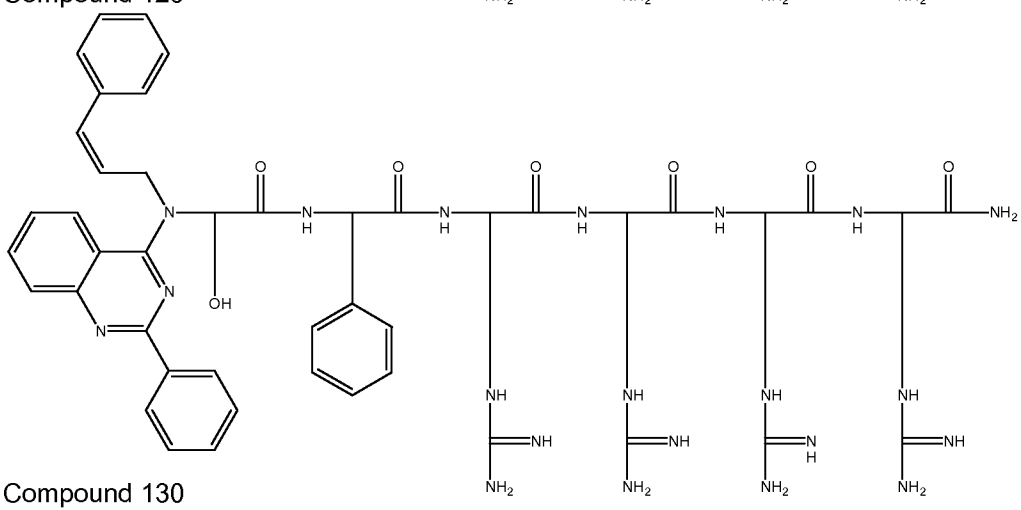
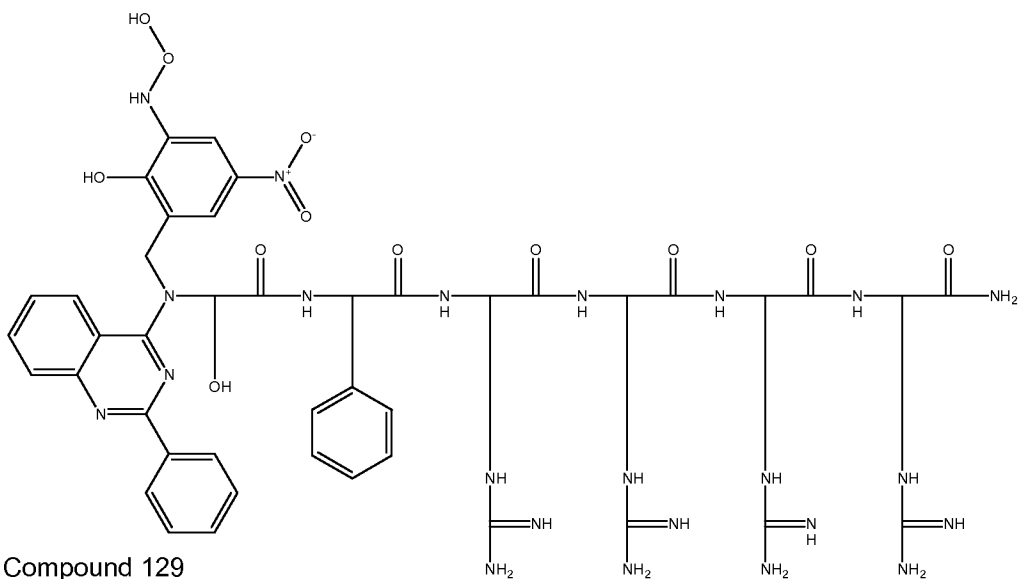


Compound 127

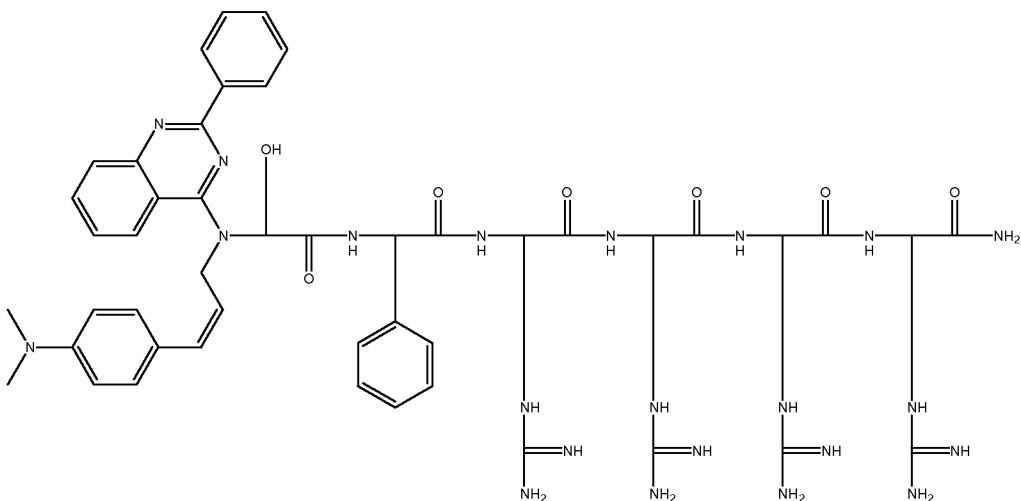


Compound 128

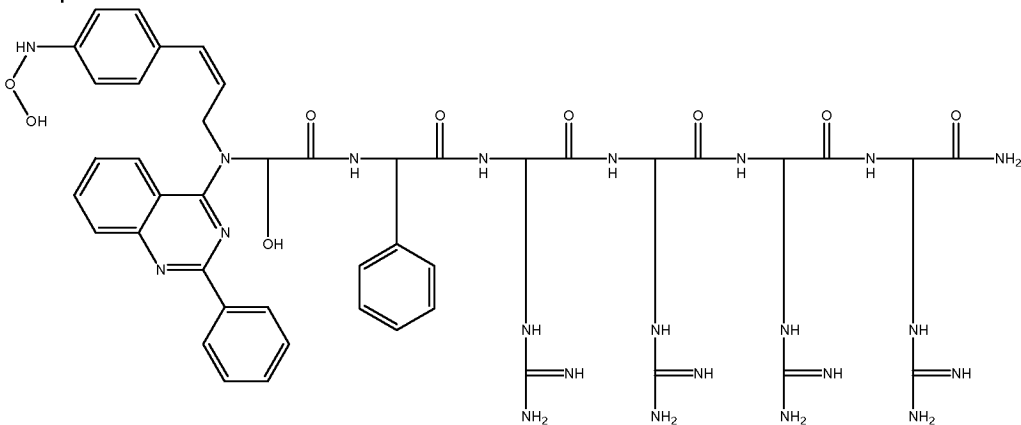
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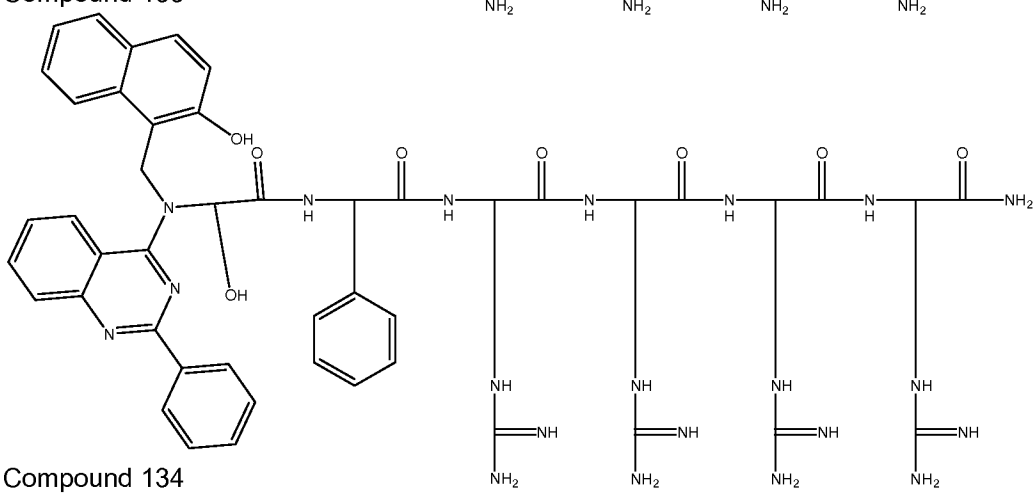
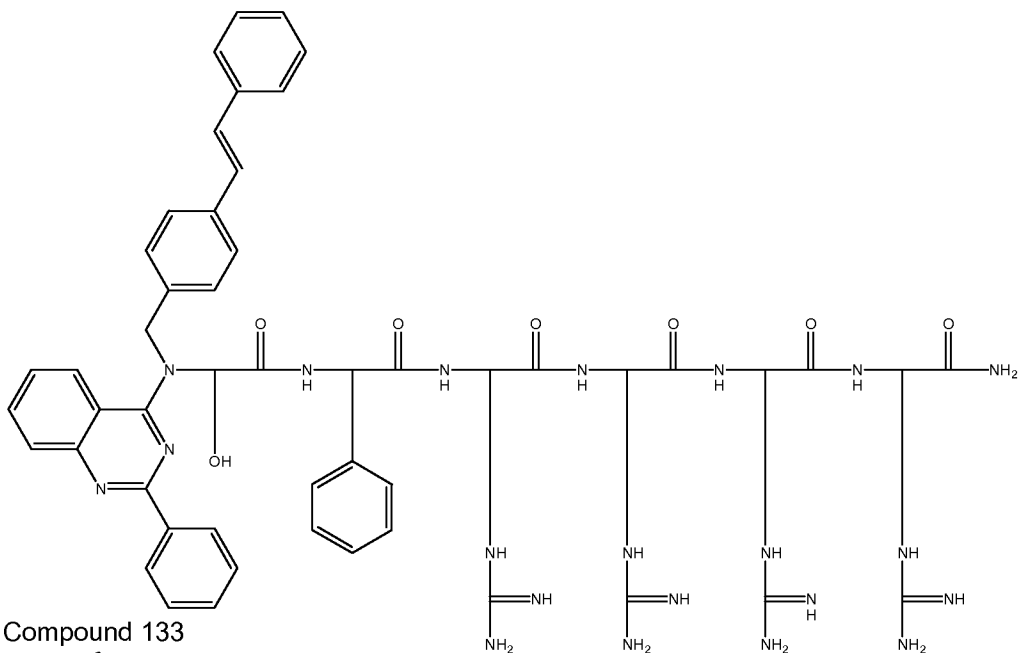
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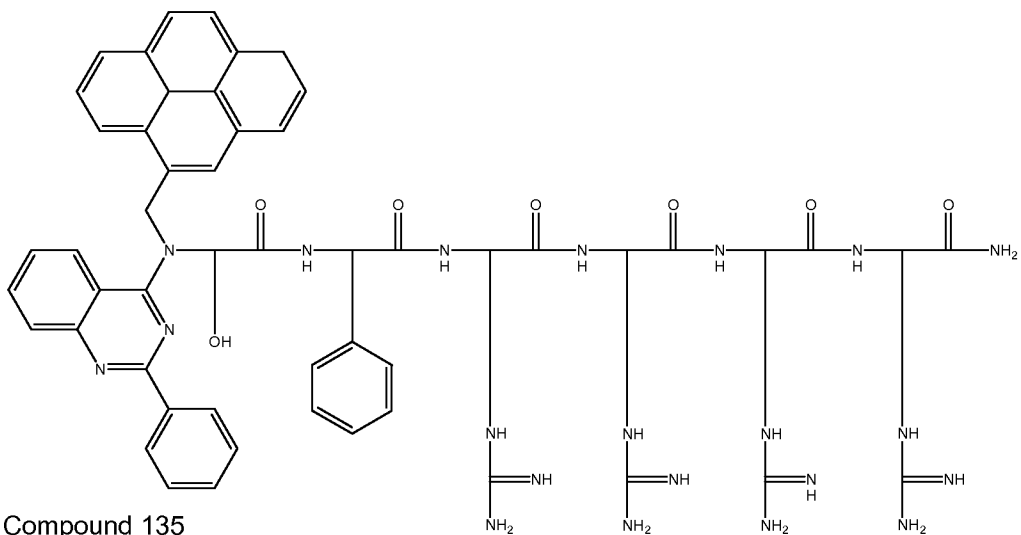


Compound 131

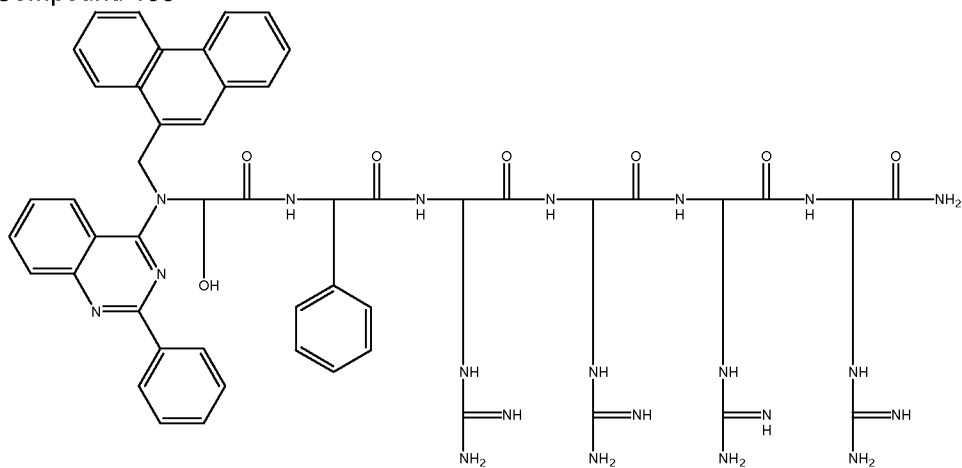


Compound 132

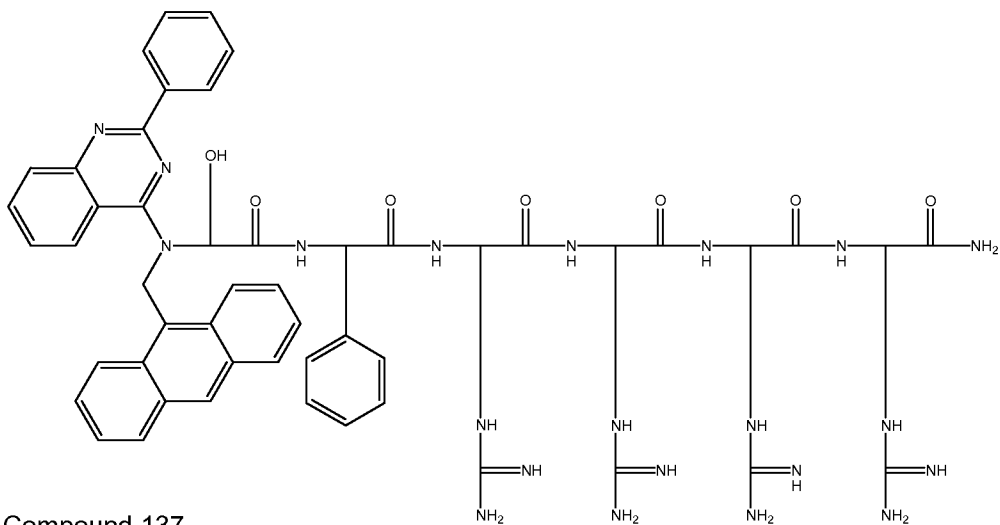




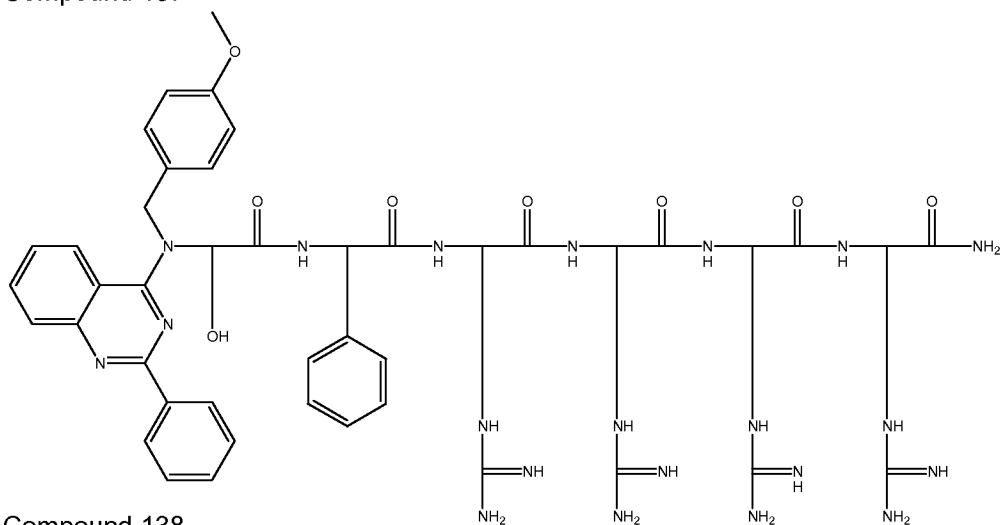
Compound 135



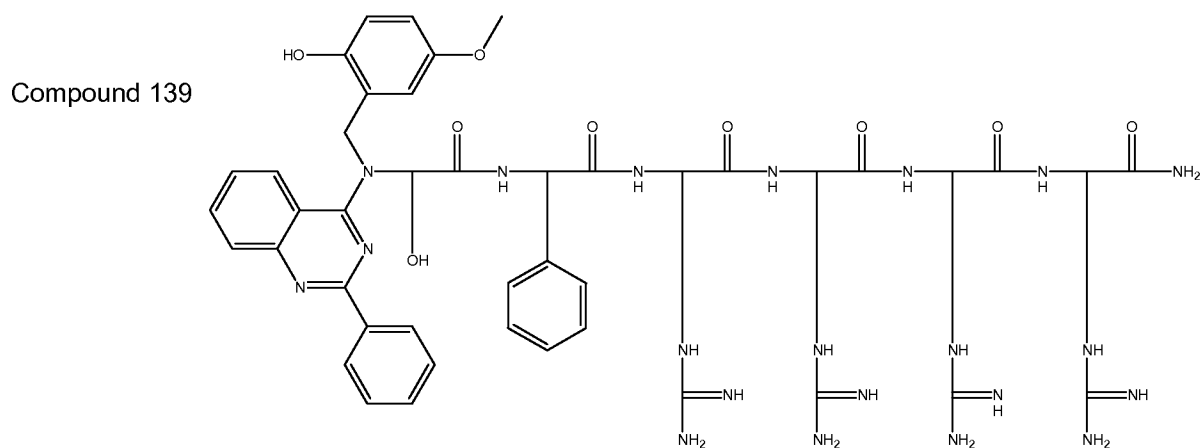
Compound 136

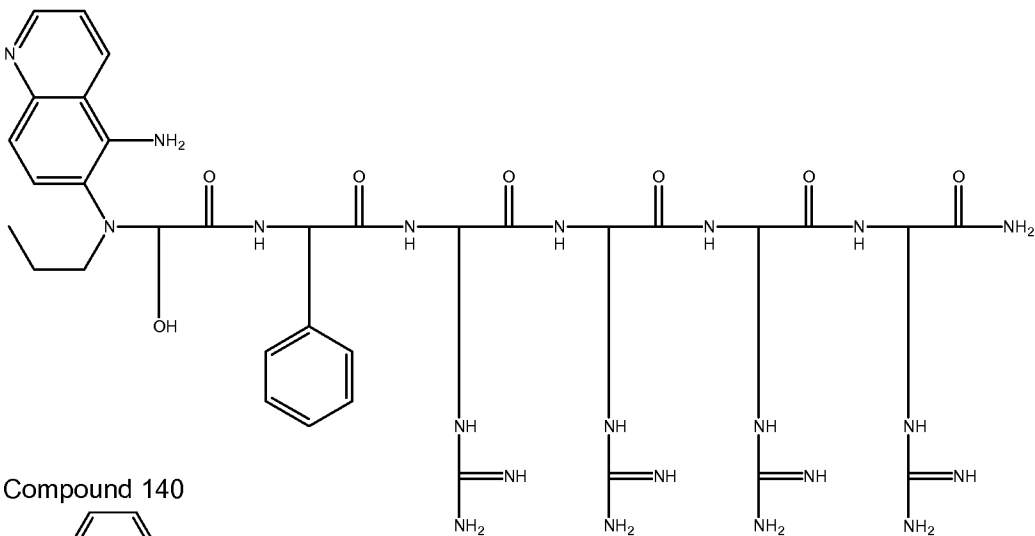


Compound 137

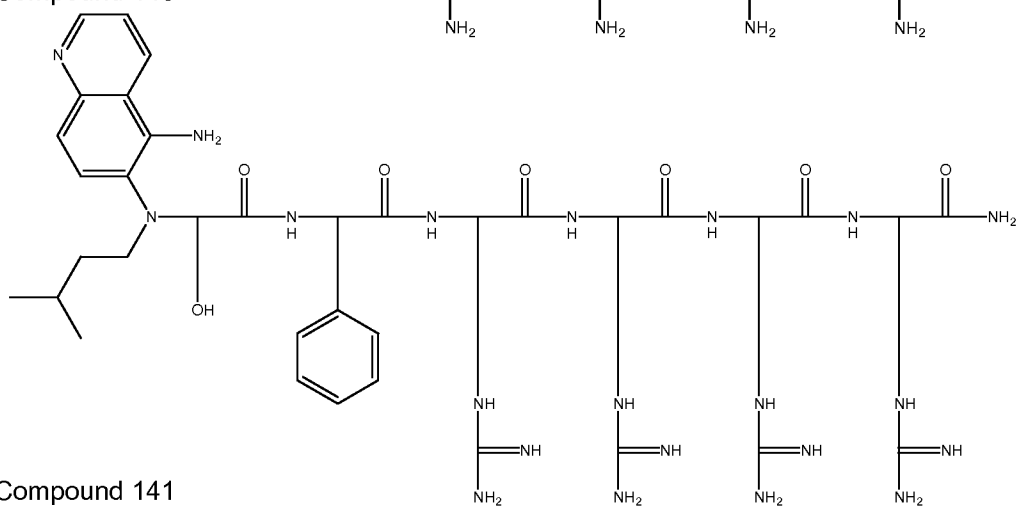


Compound 138

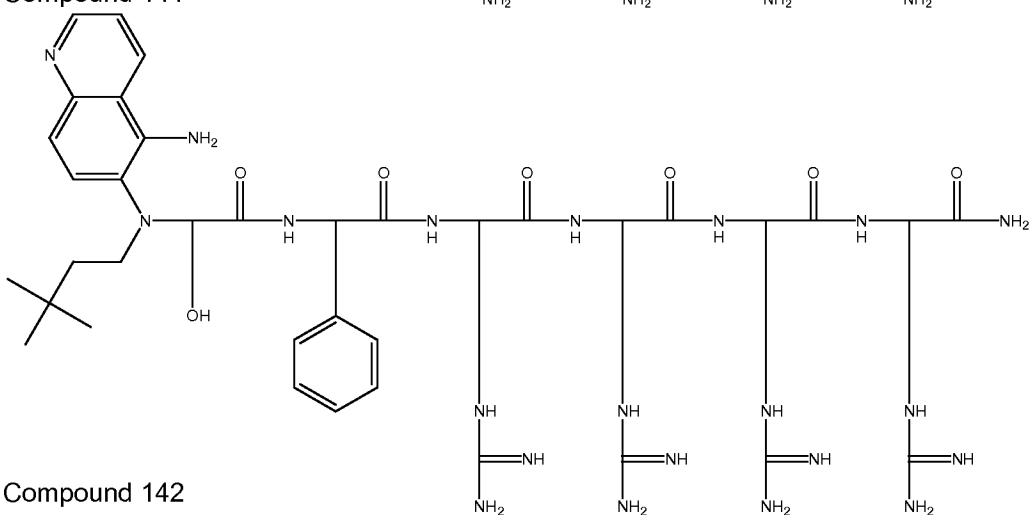




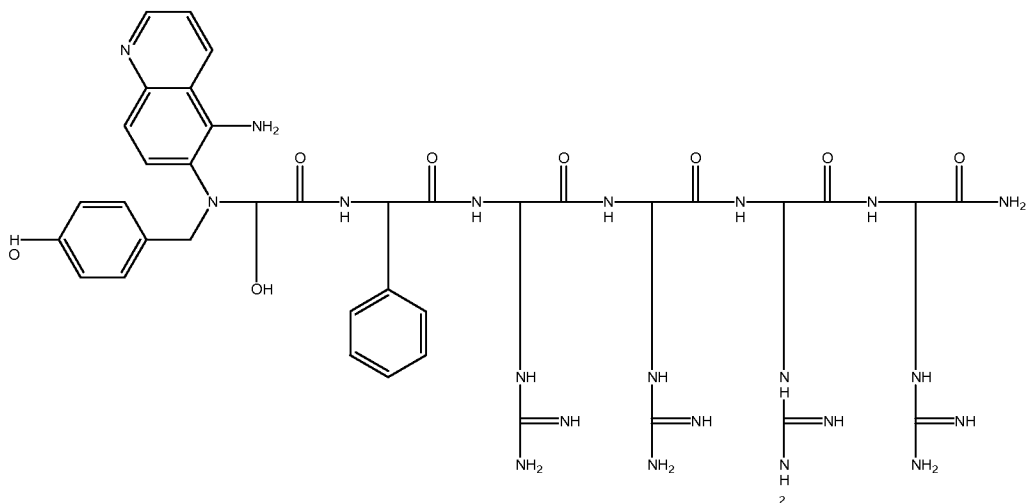
Compound 140



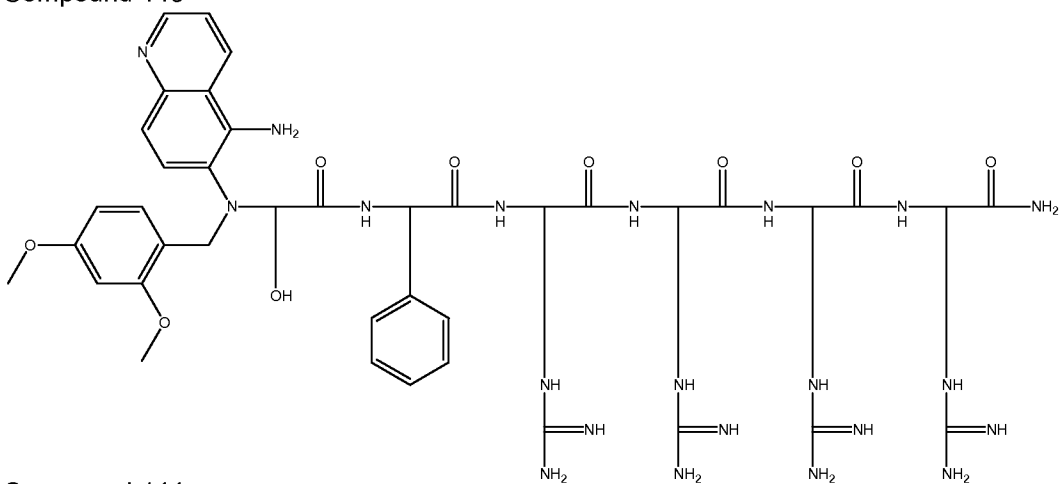
Compound 141



Compound 142

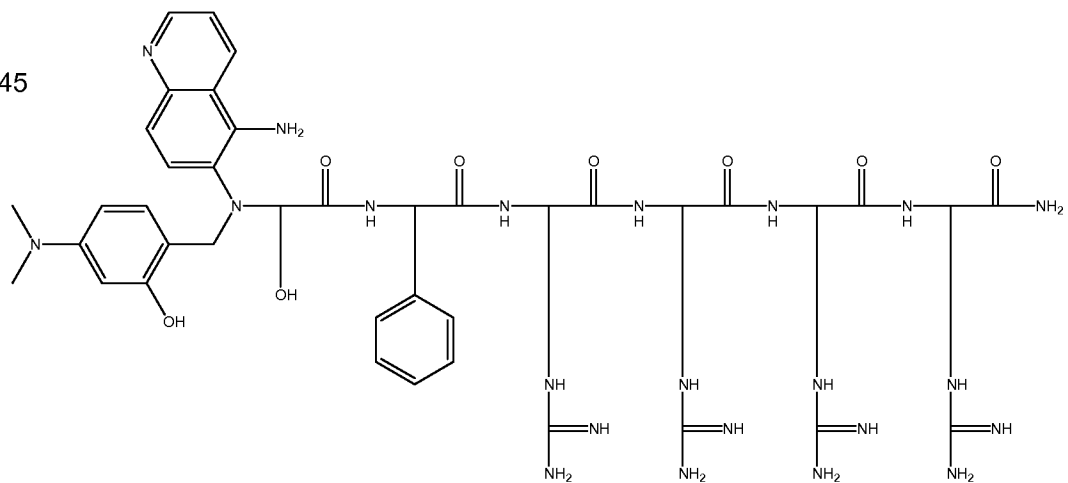


Compound 143

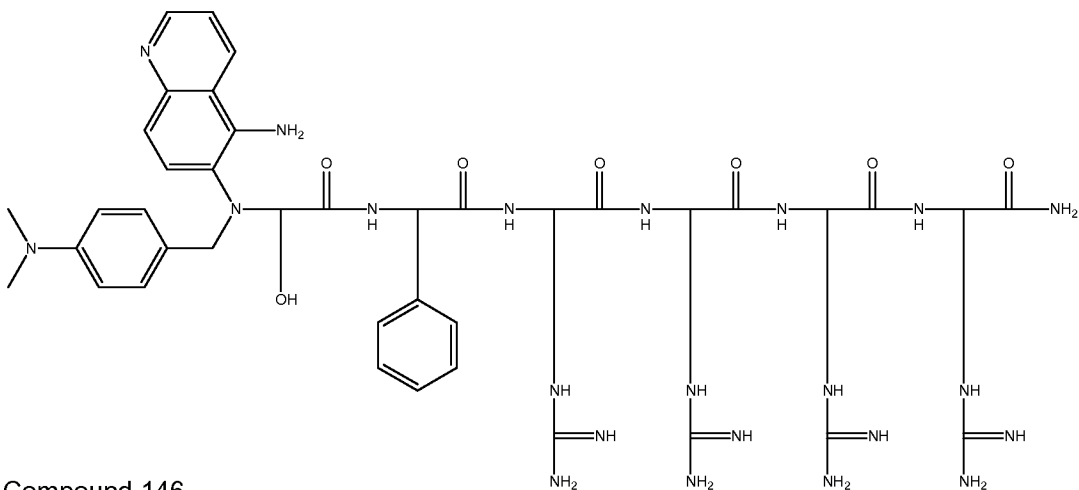


Compound 144

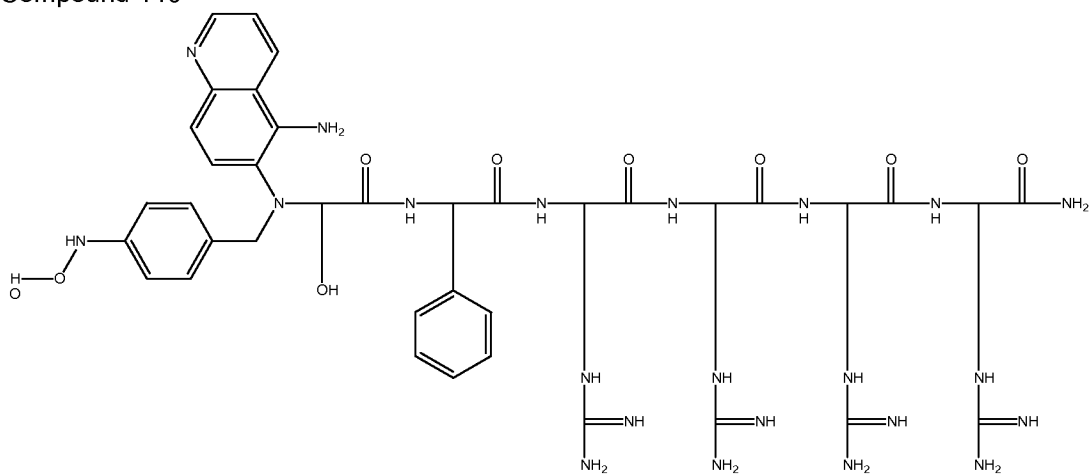
Compound 145



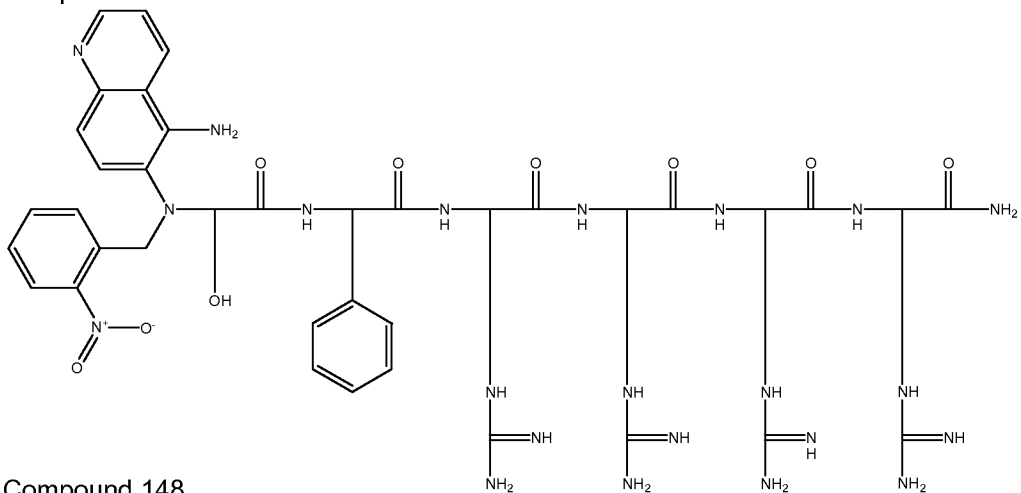
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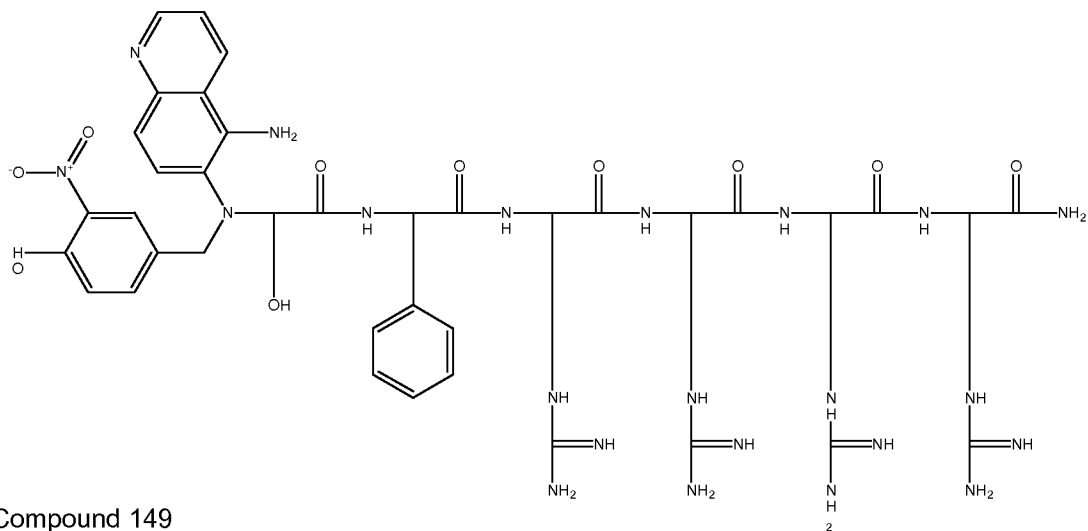
Compound 146



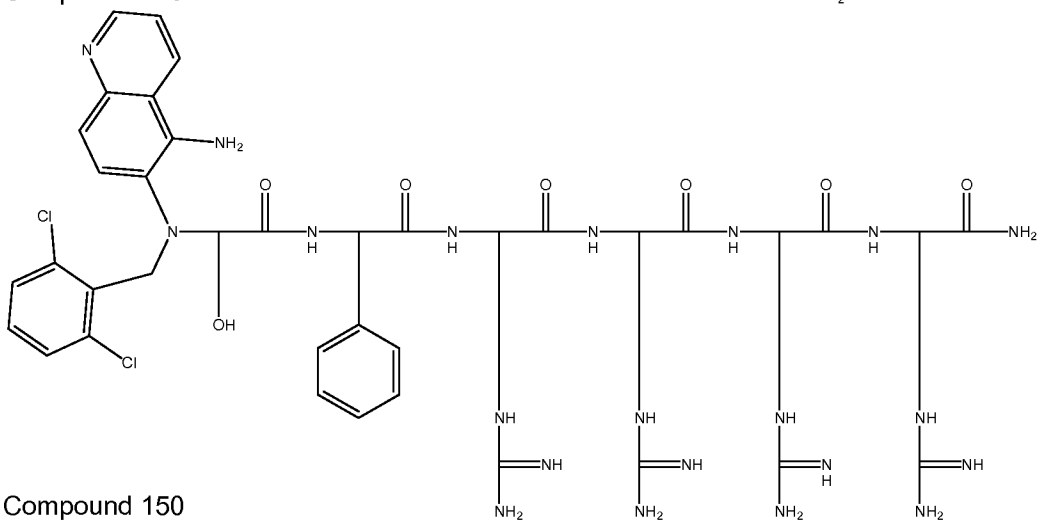
Compound 147



Compound 148

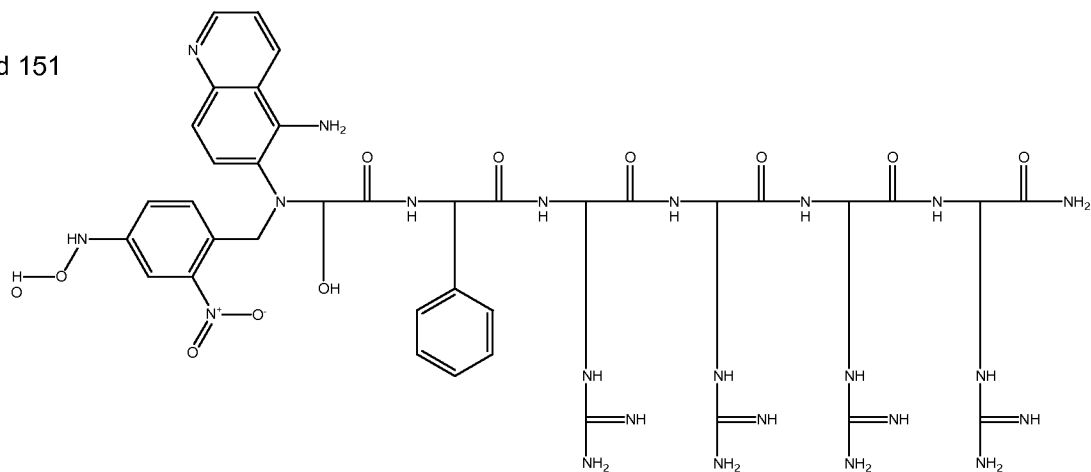


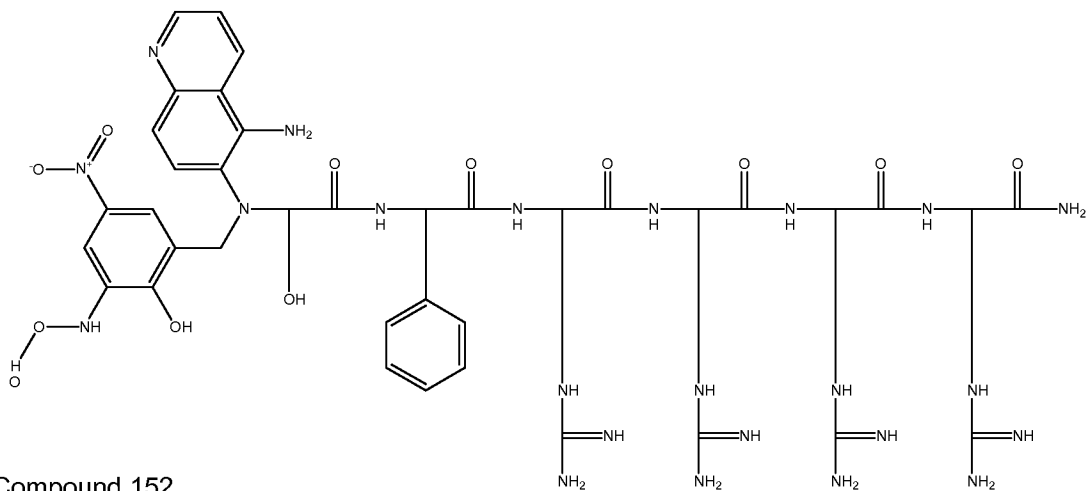
Compound 149



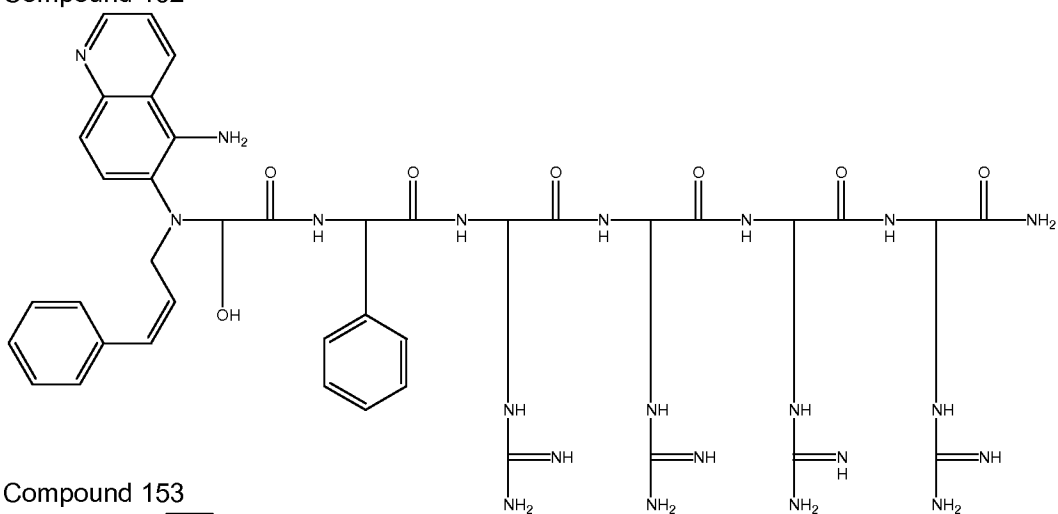
Compound 150

Compound 151

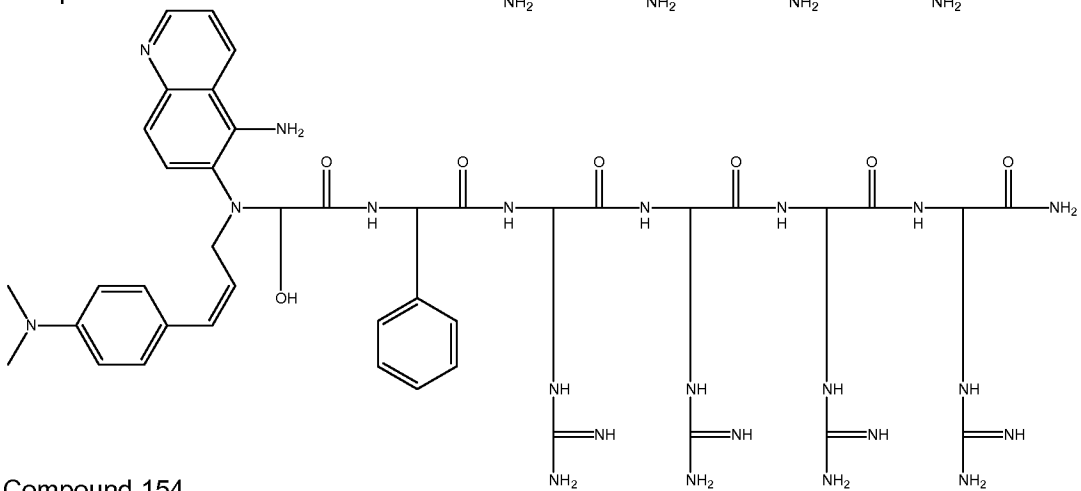




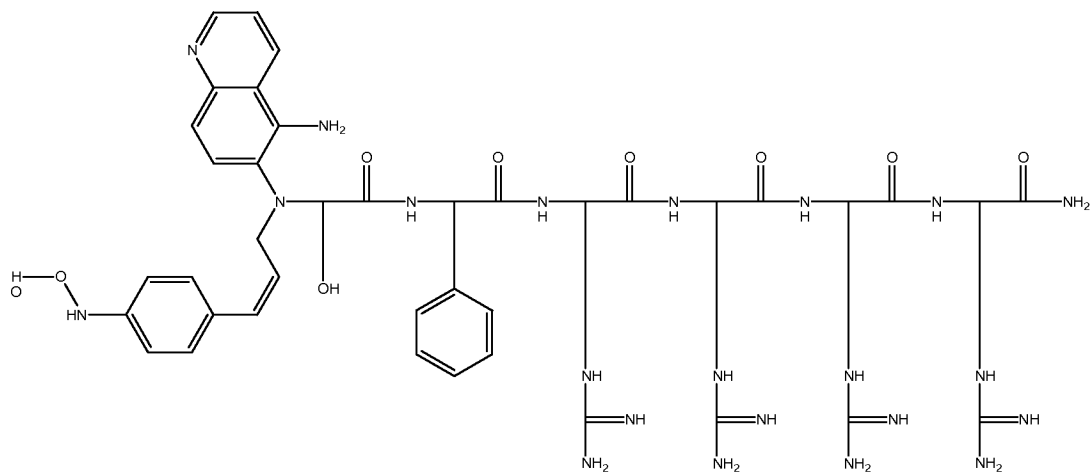
Compound 152



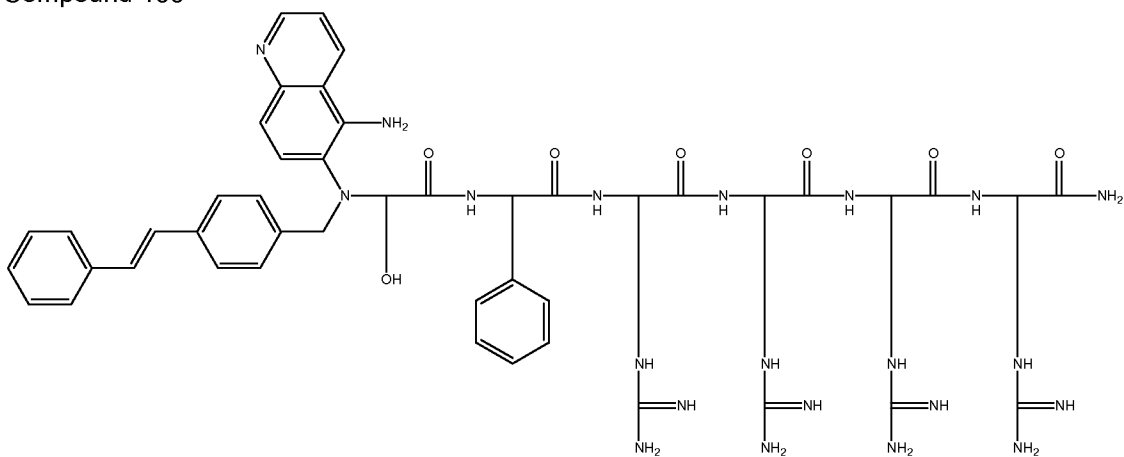
Compound 153



Compound 154

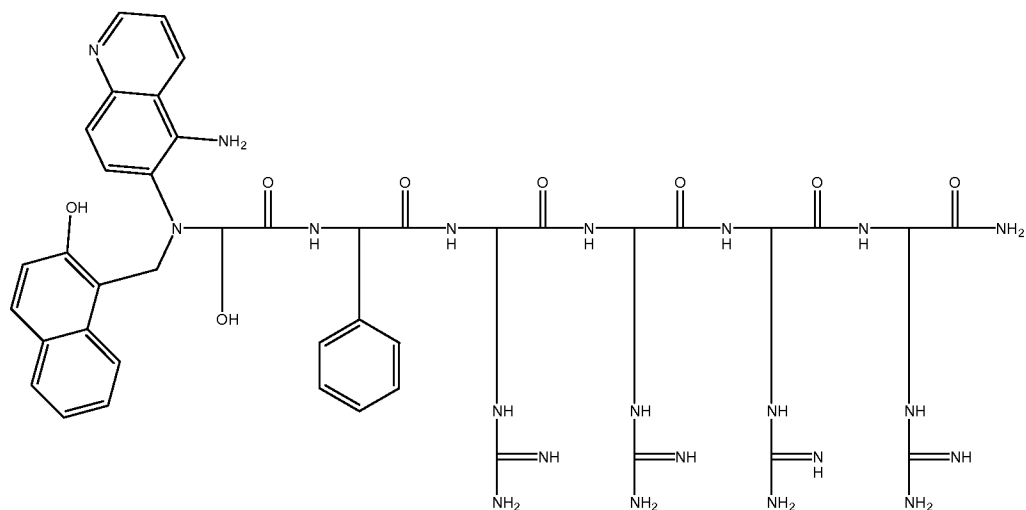


Compound 155

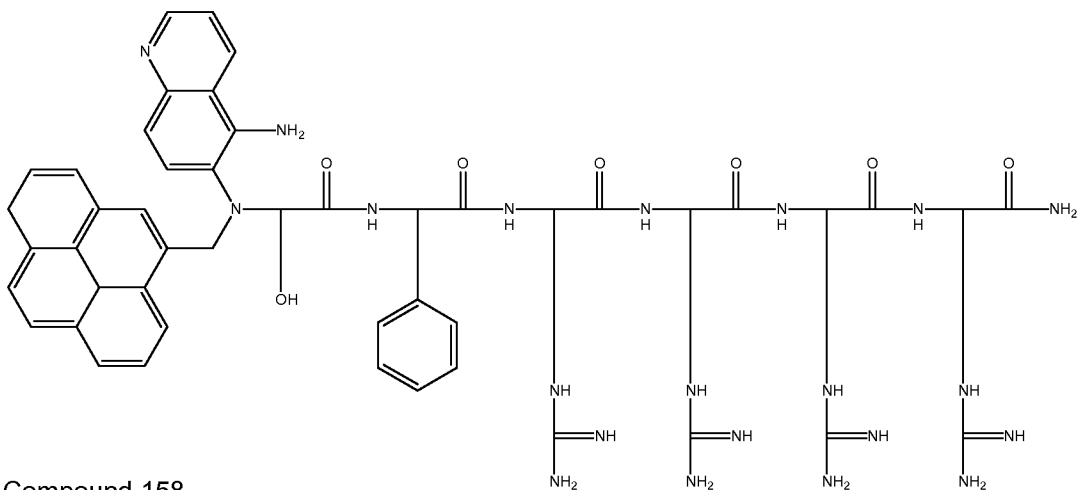


Compound 156

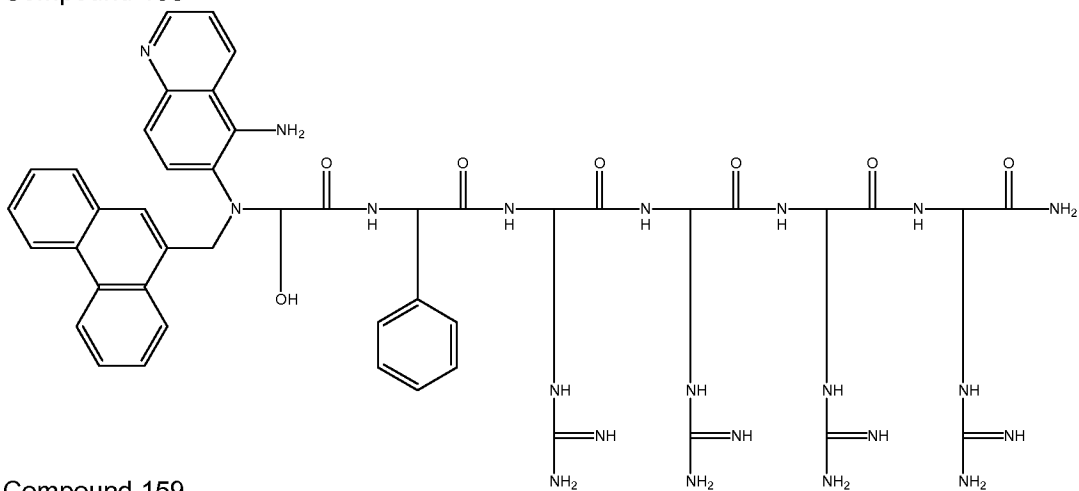
Compound 157



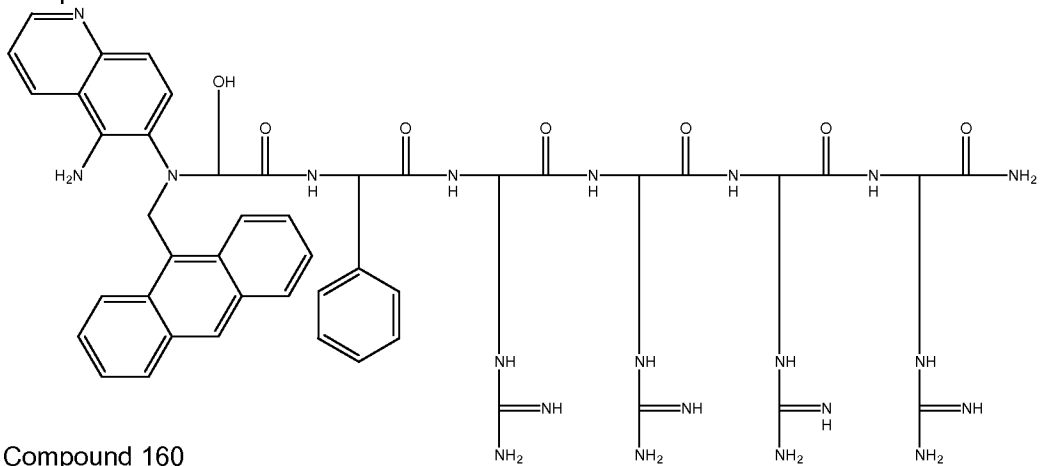
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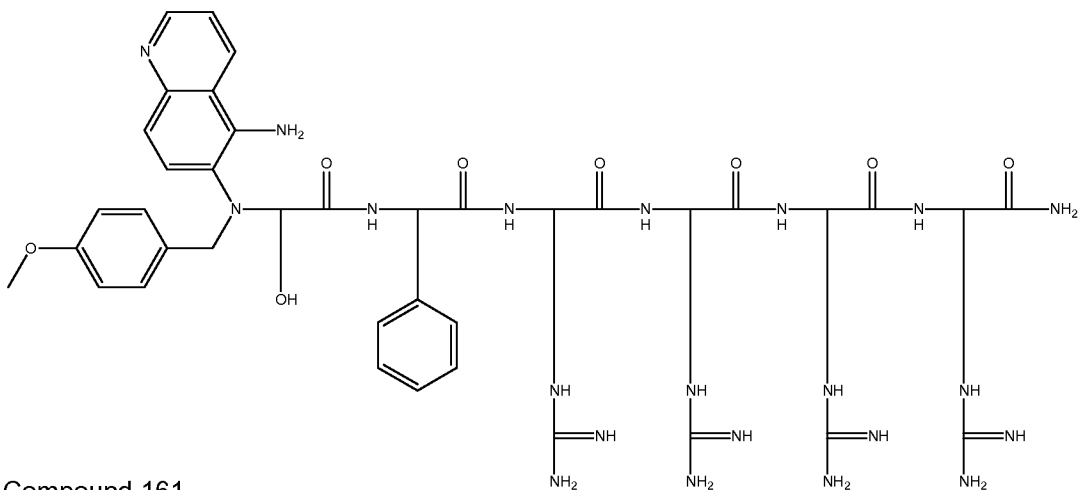
Compound 158



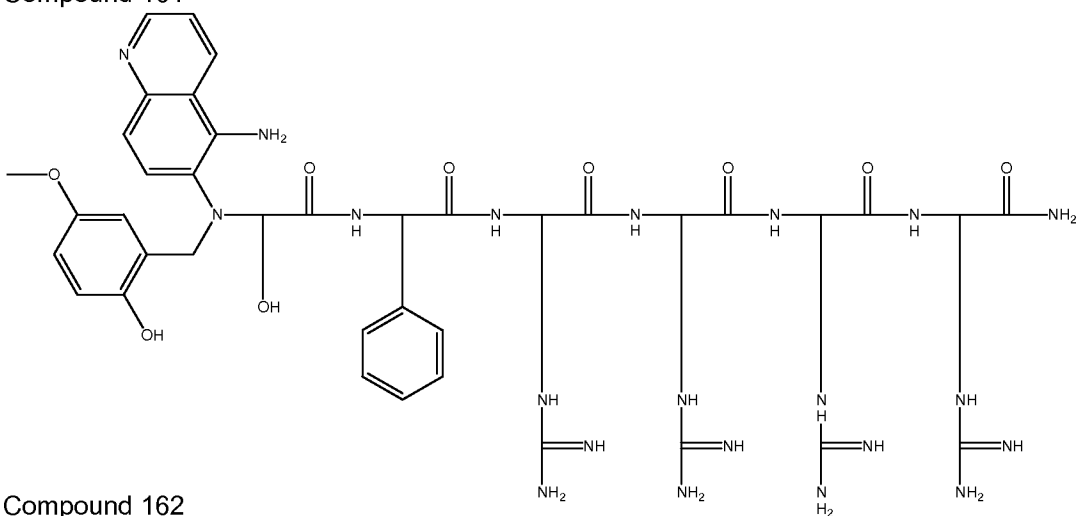
Compound 159



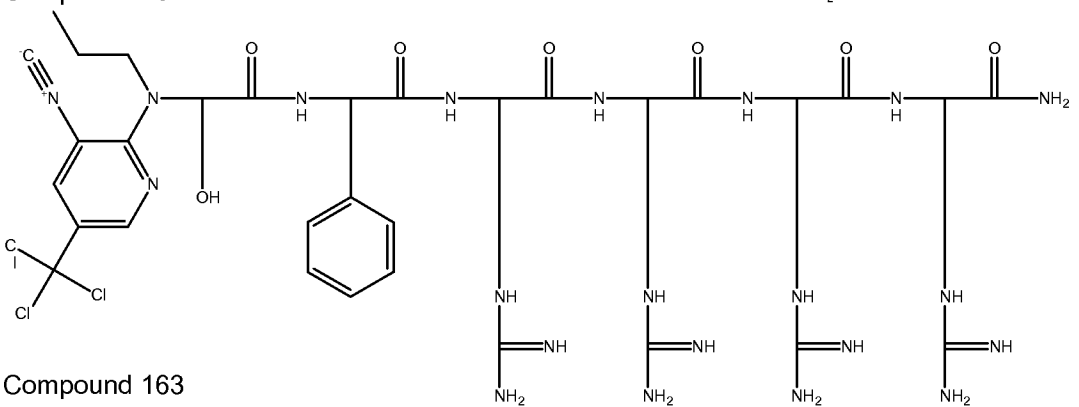
Compound 160



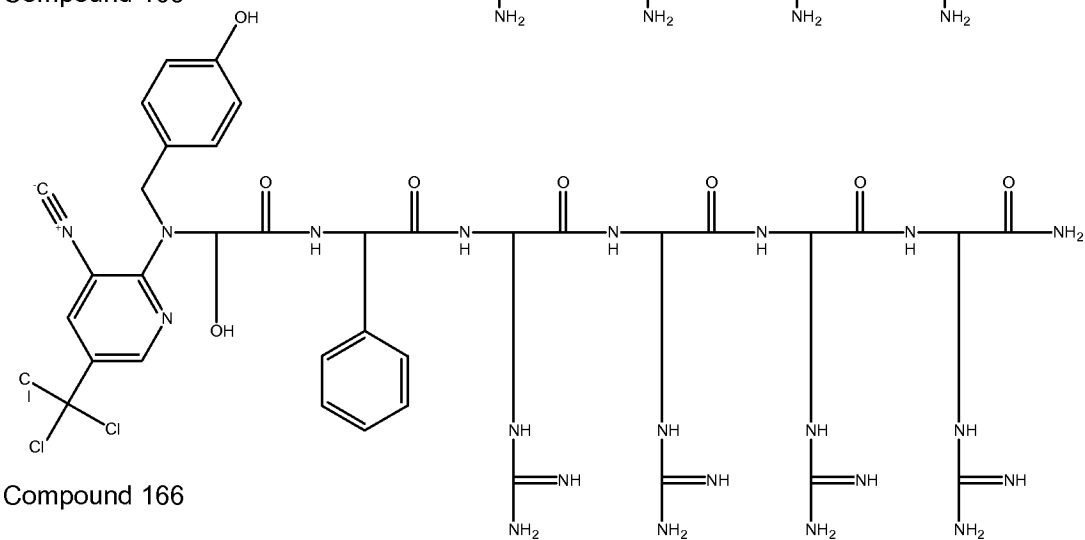
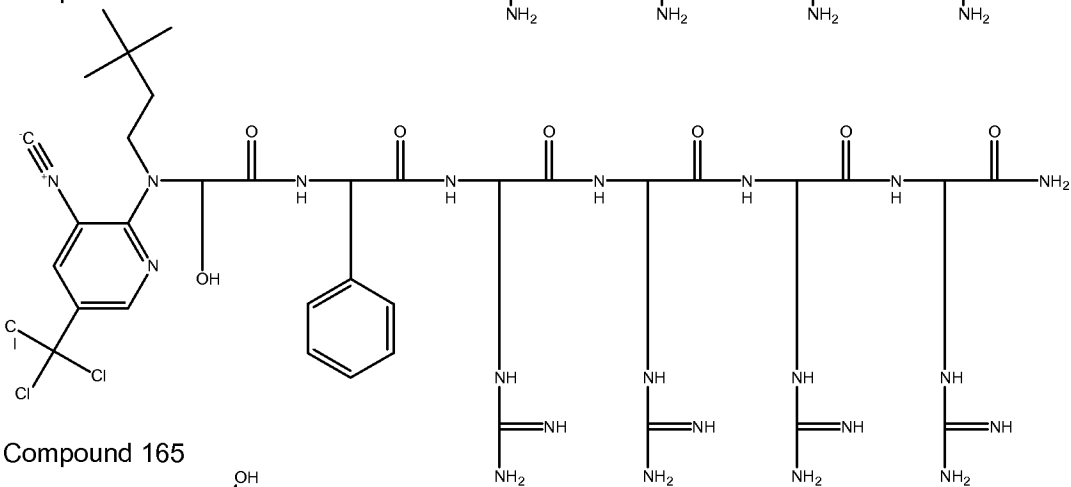
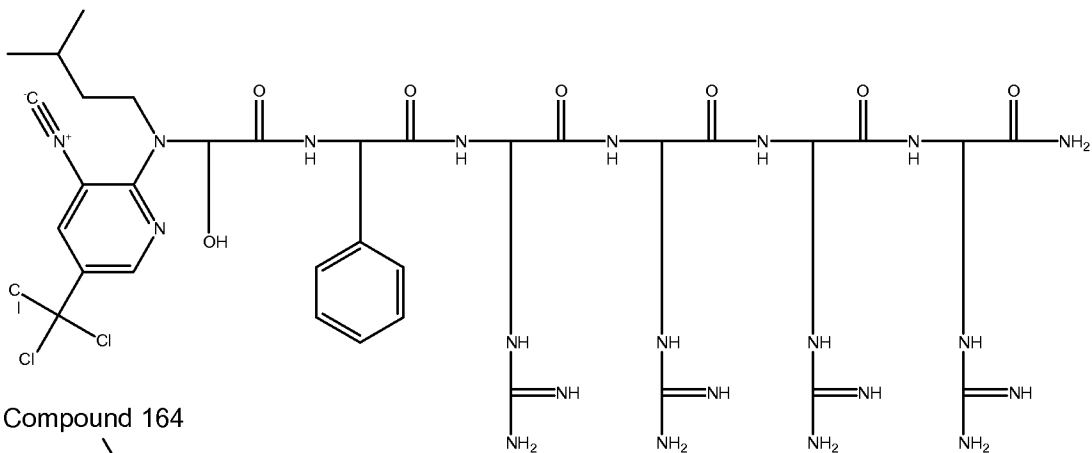
Compound 161



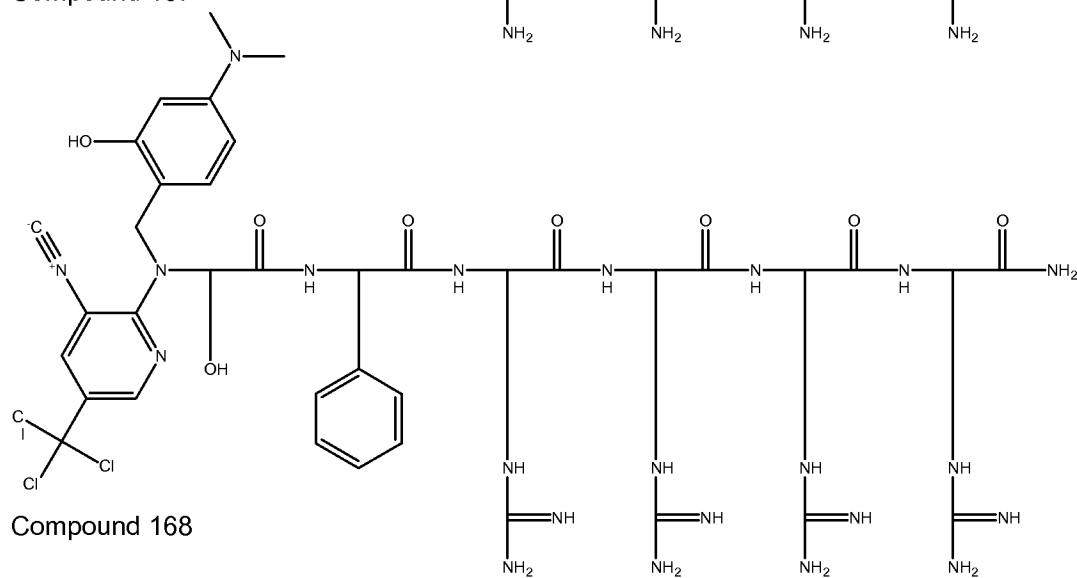
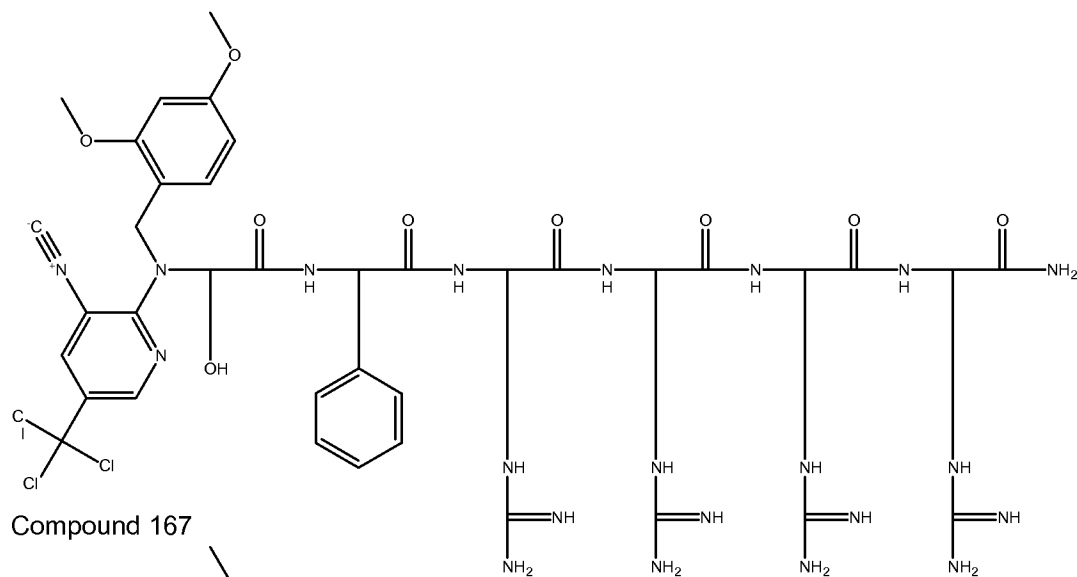
Compound 162

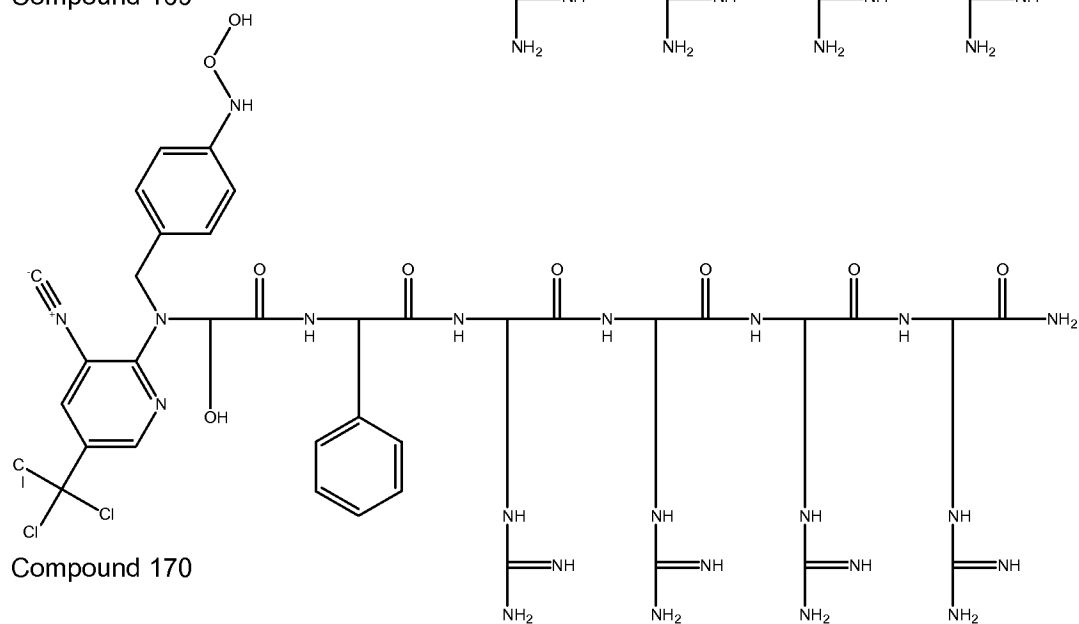
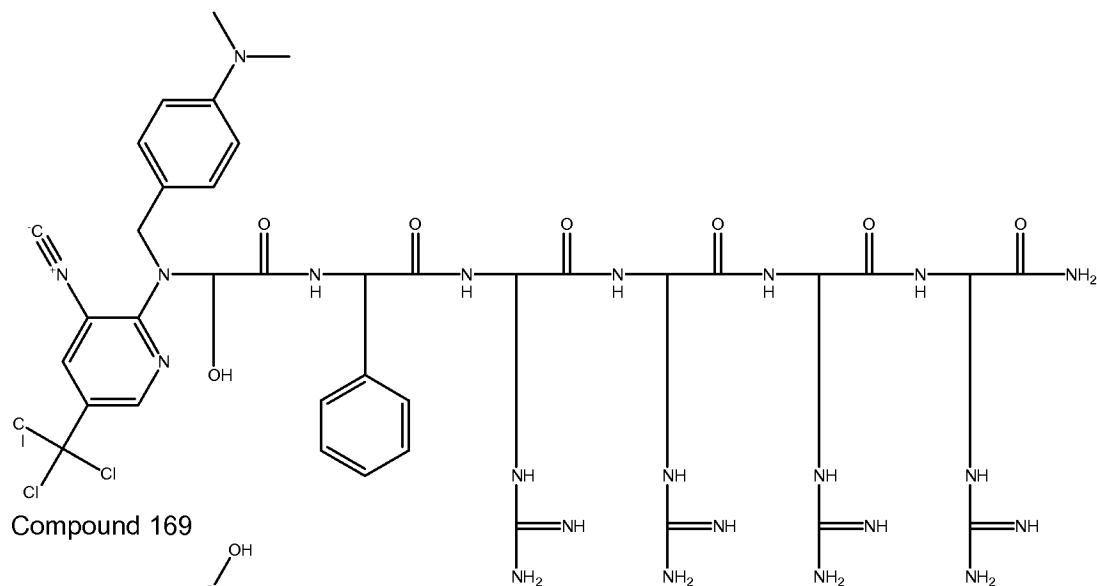


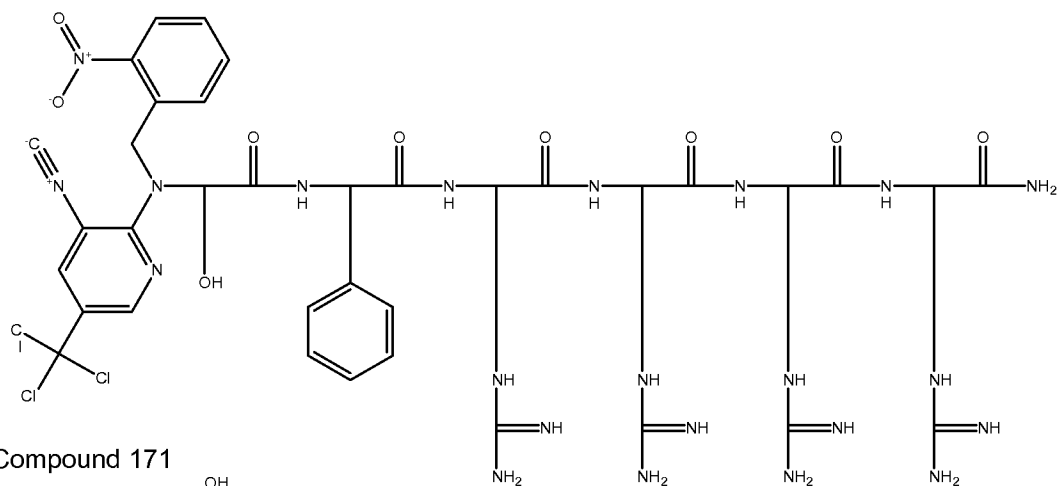
Compound 163



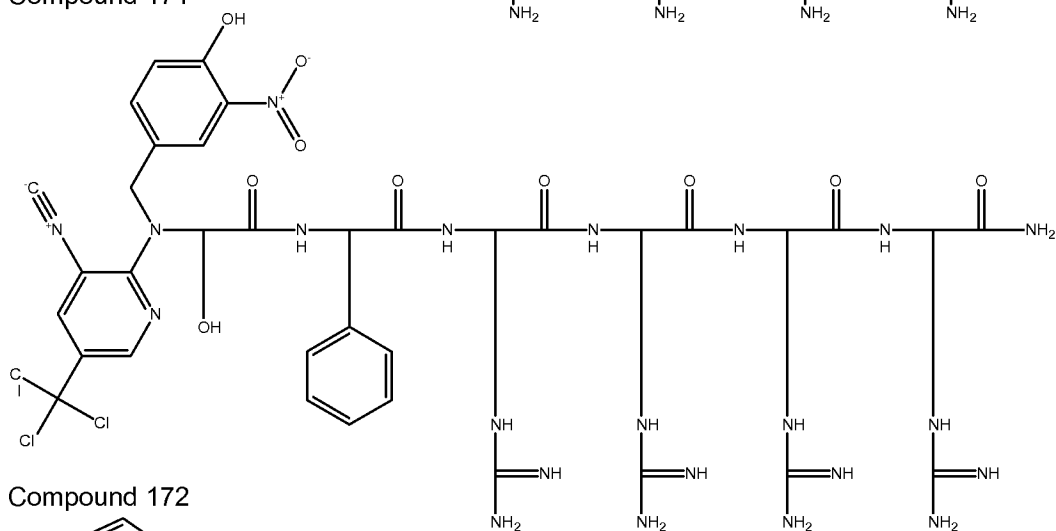
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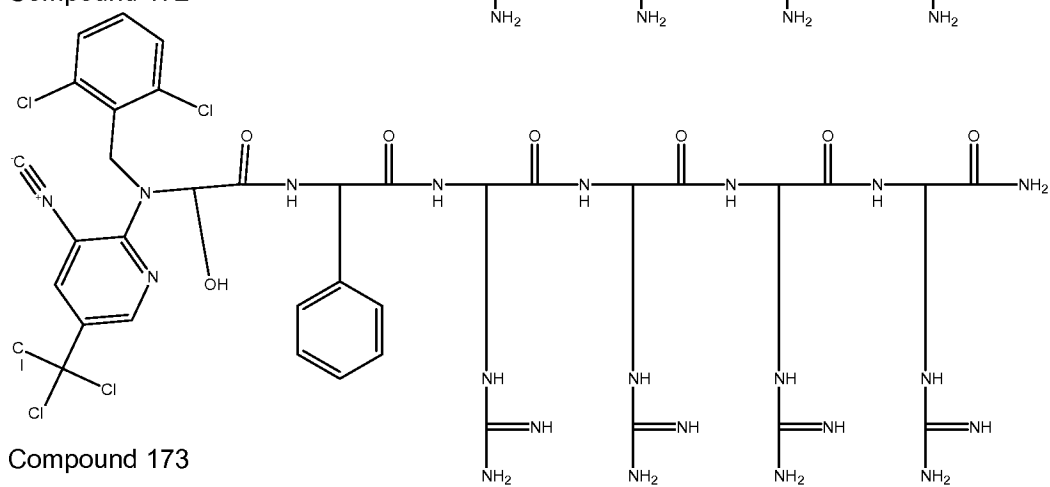




Compound 171

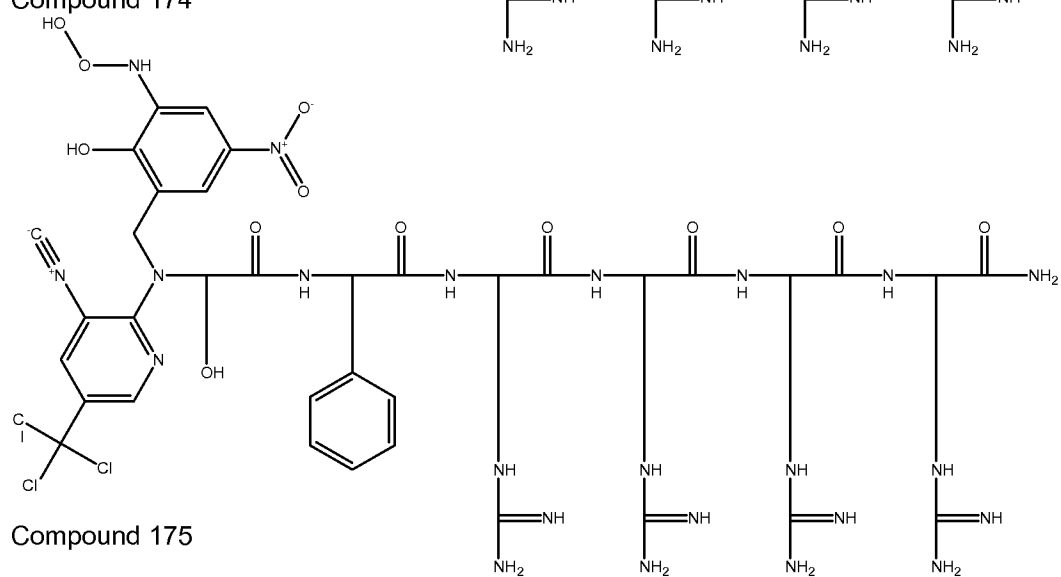
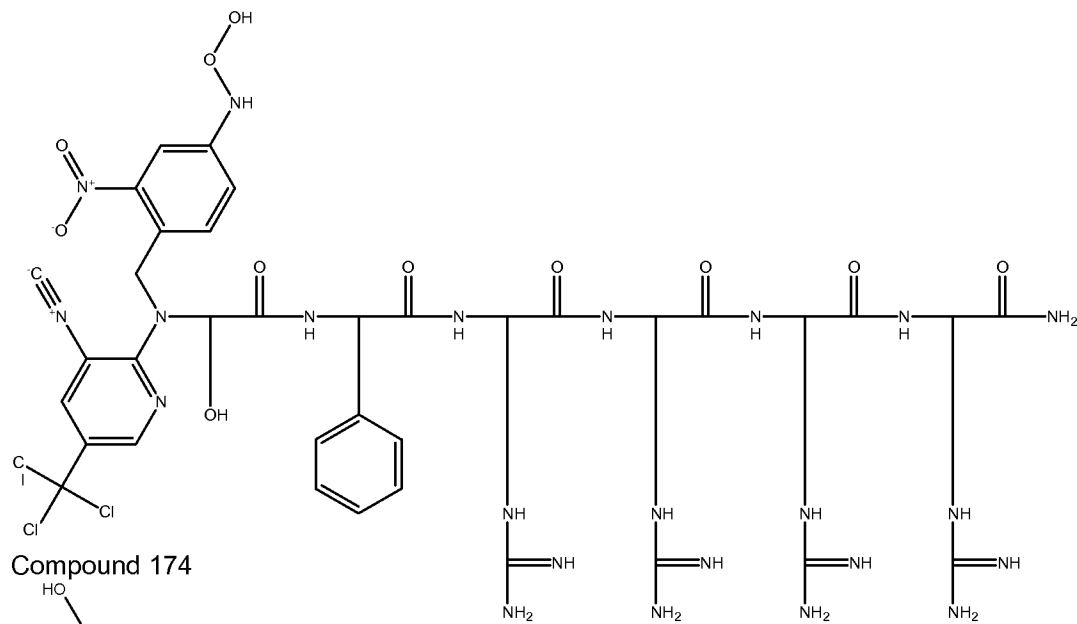


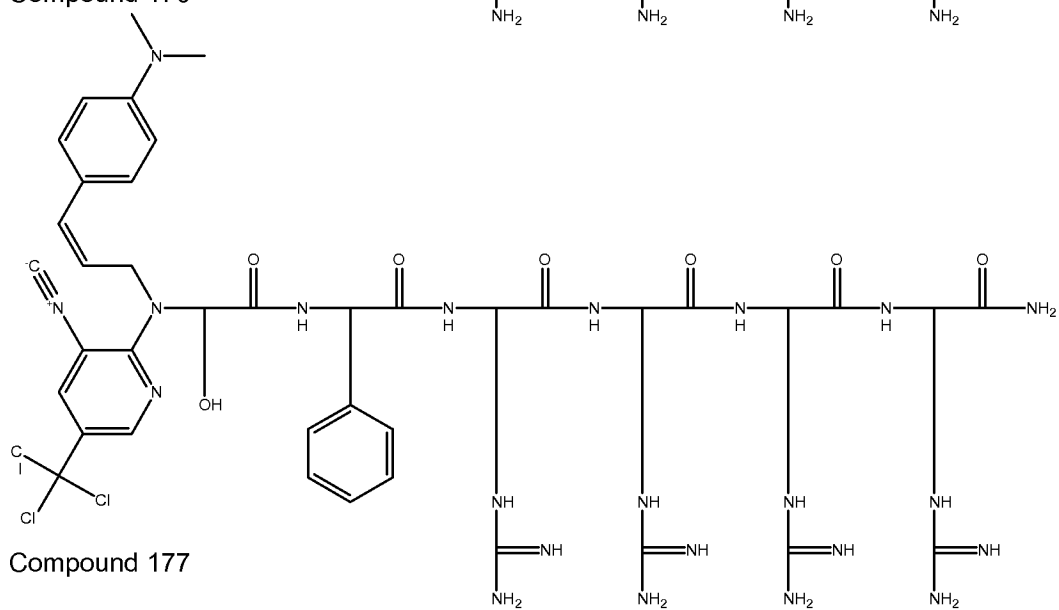
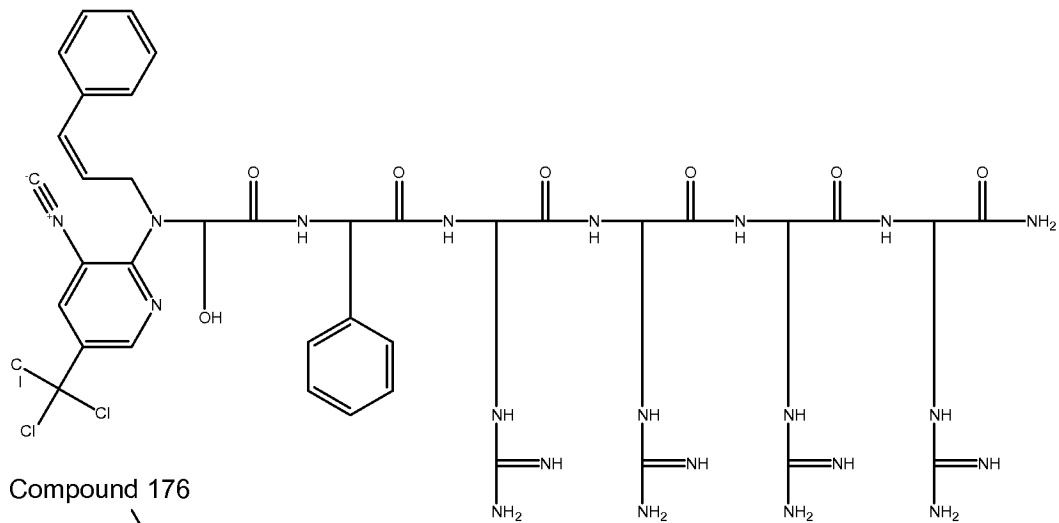
Compound 172

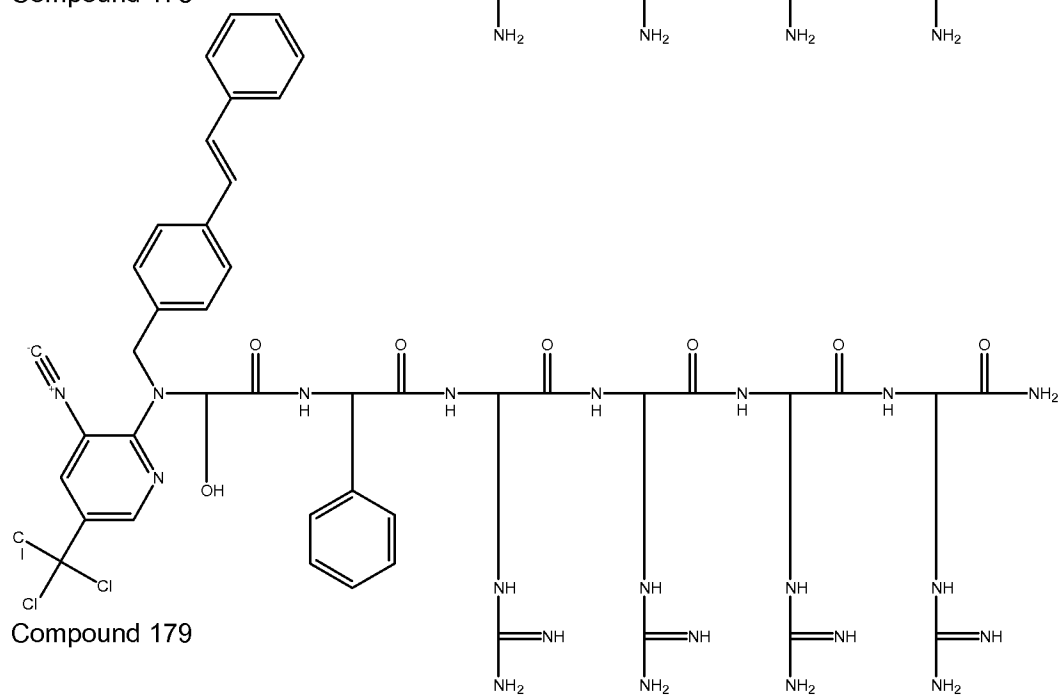
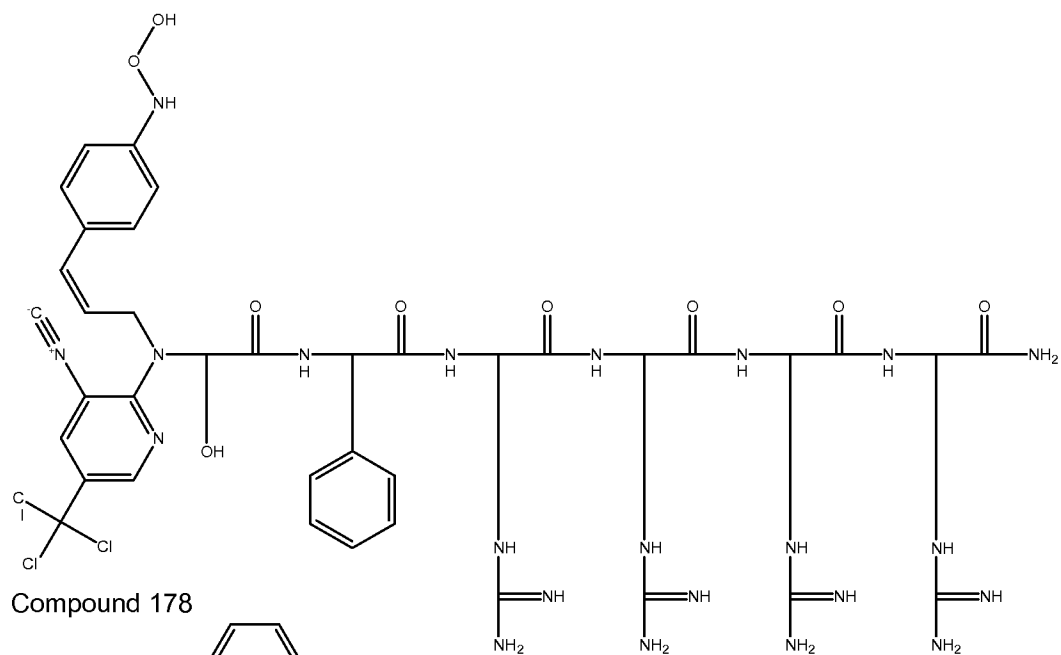


Compound 173

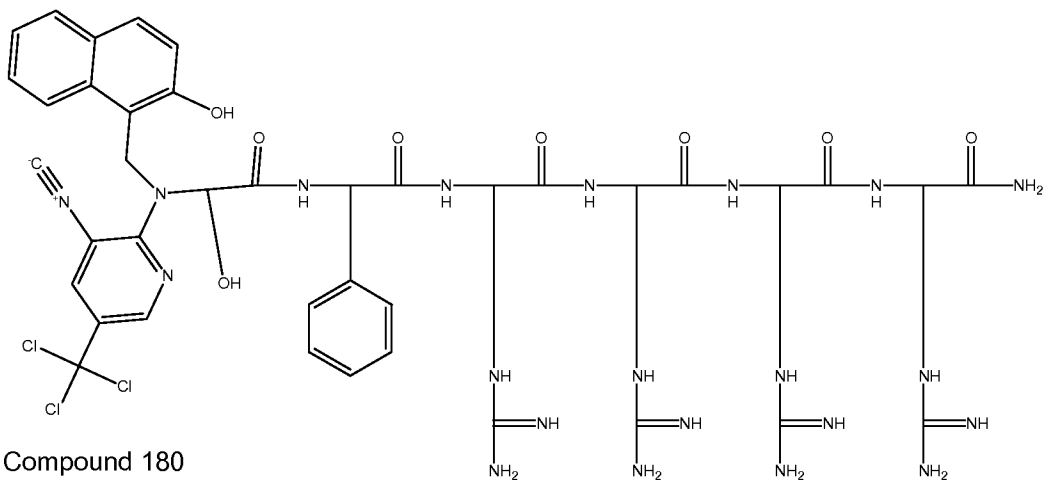
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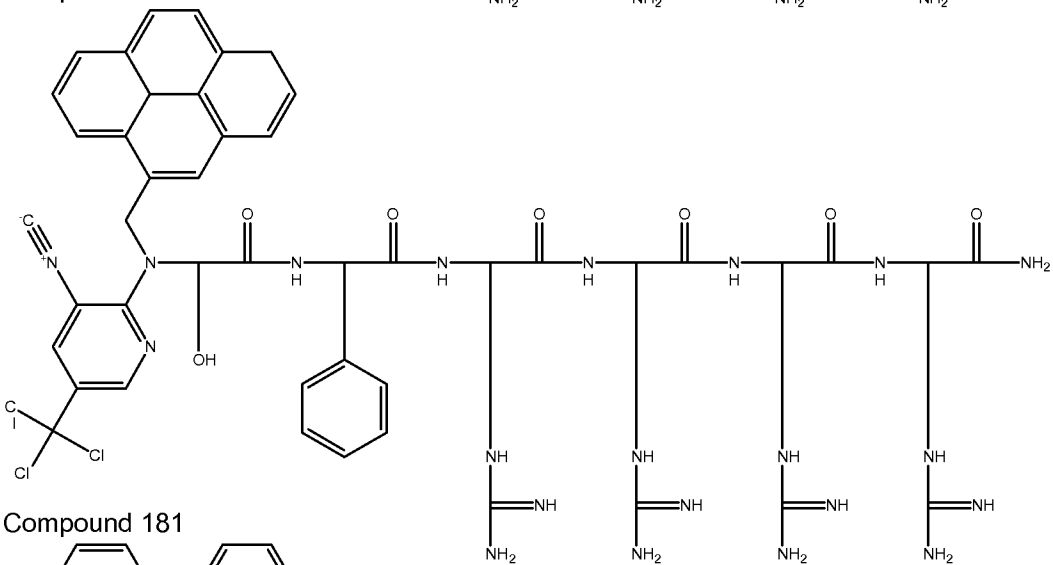




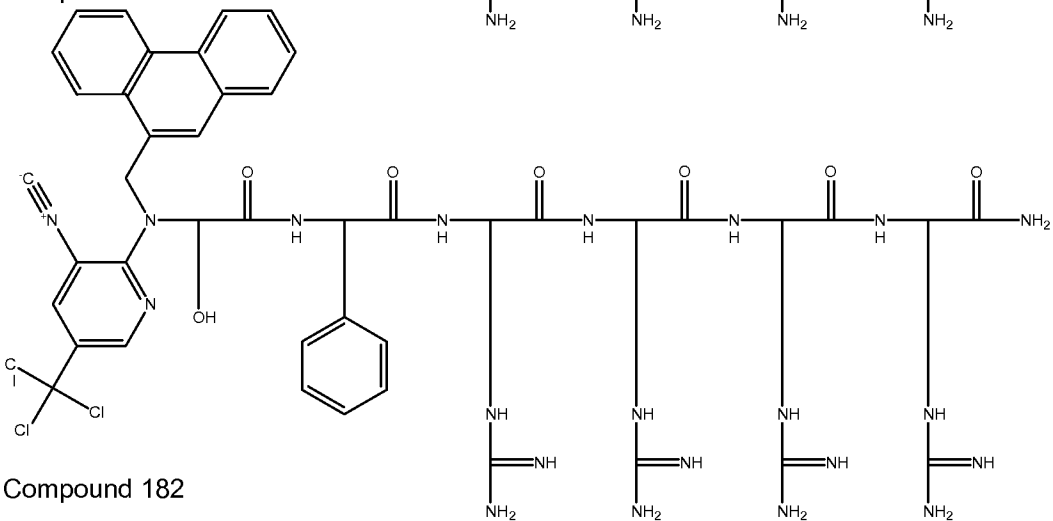
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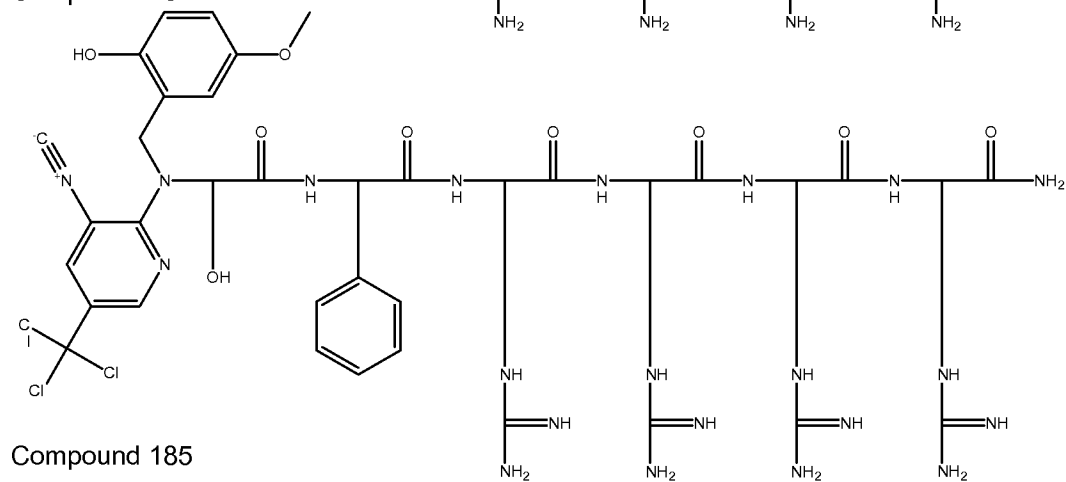
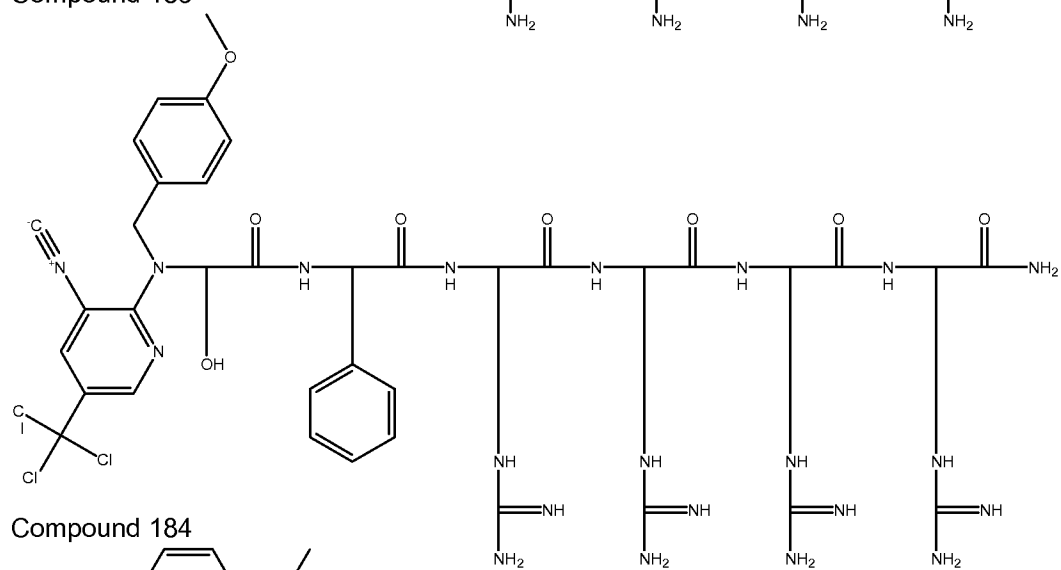
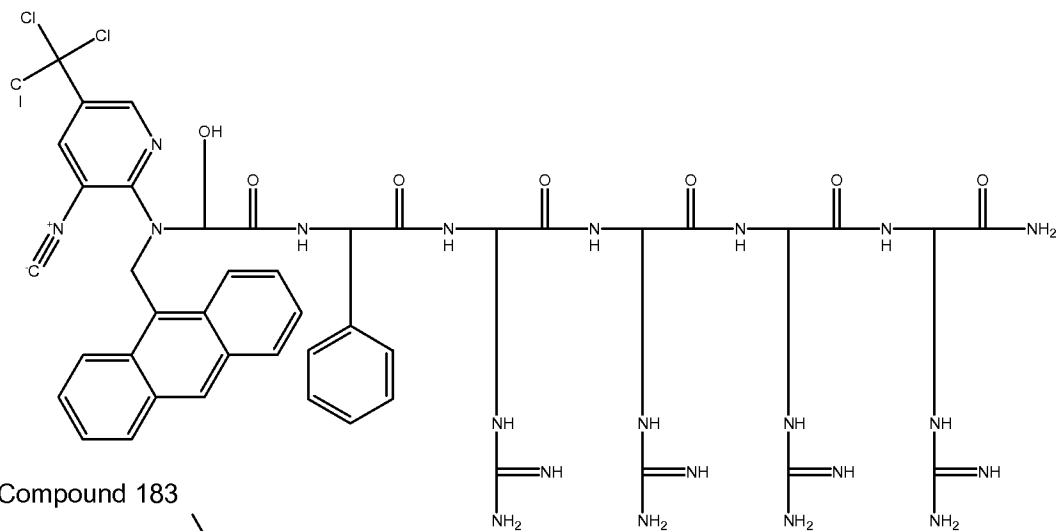
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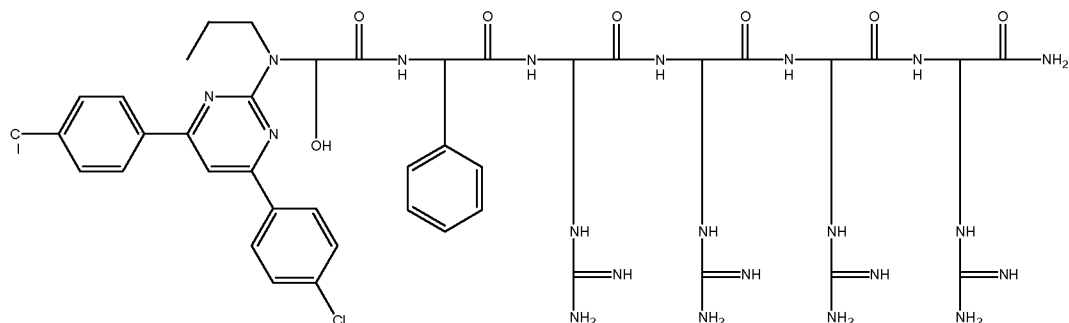
Compound 181



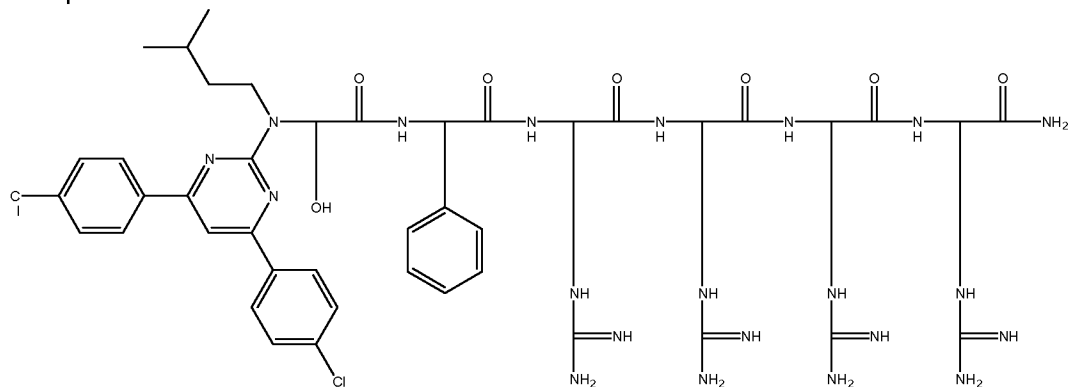
Compound 182



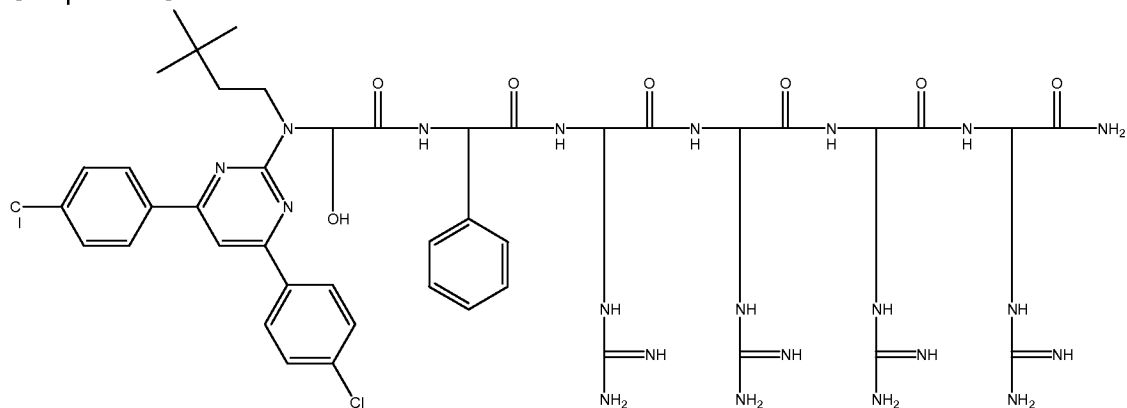
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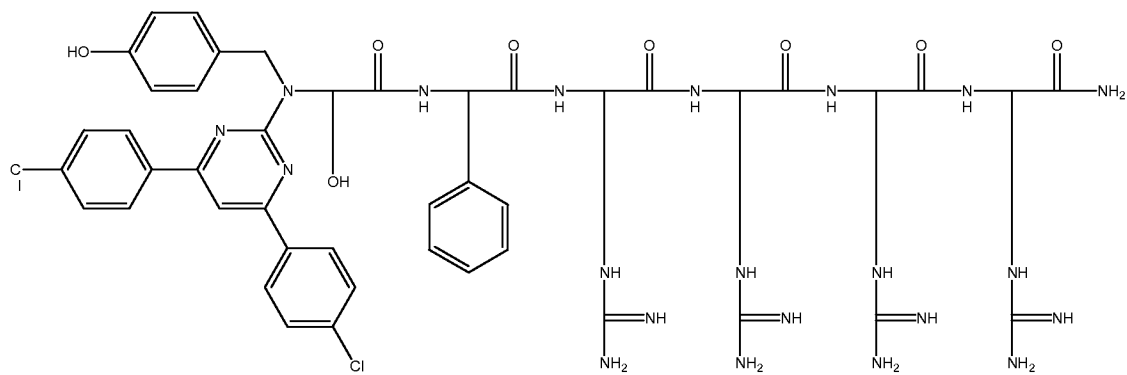
Compound 186



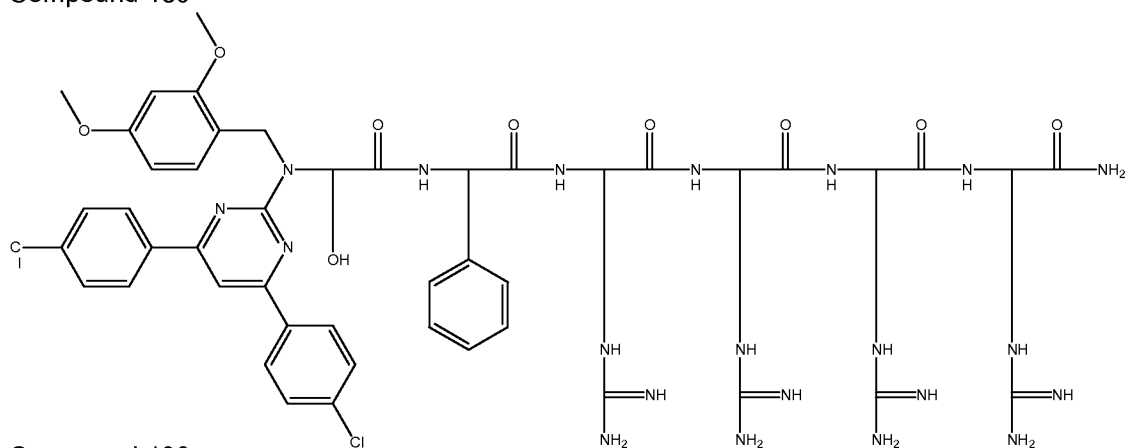
Compound 187



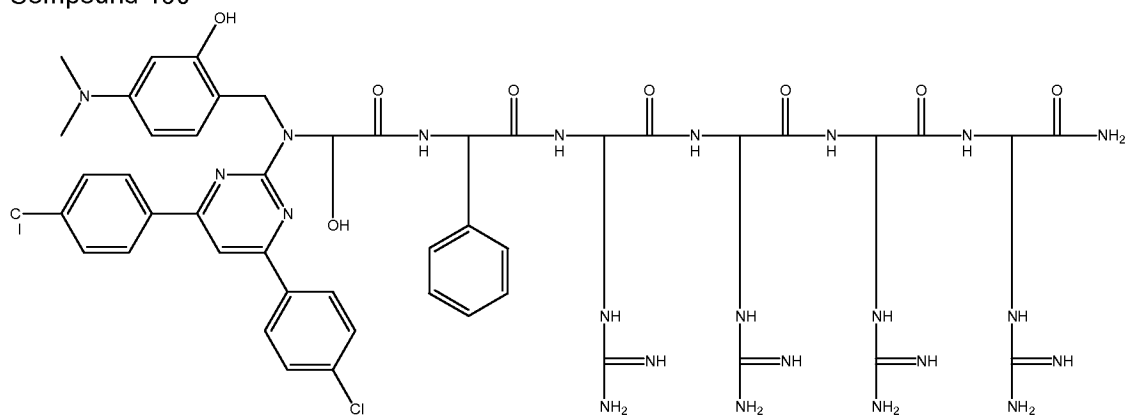
Compound 188



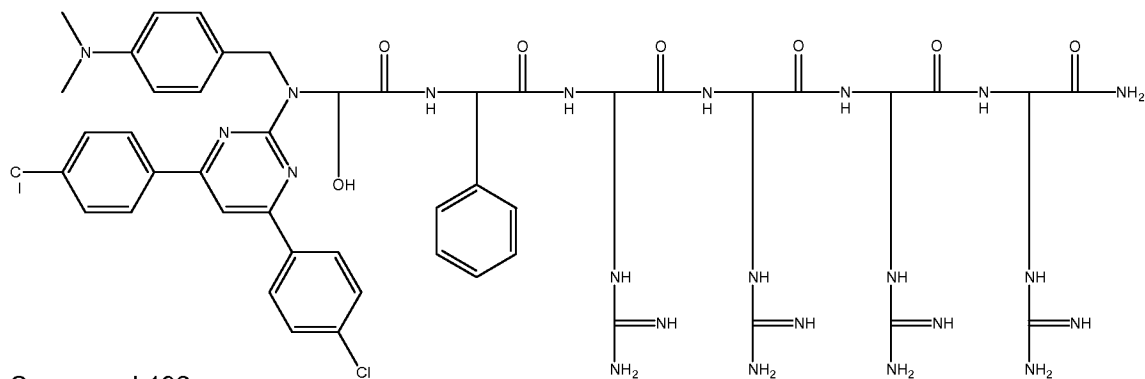
Compound 189



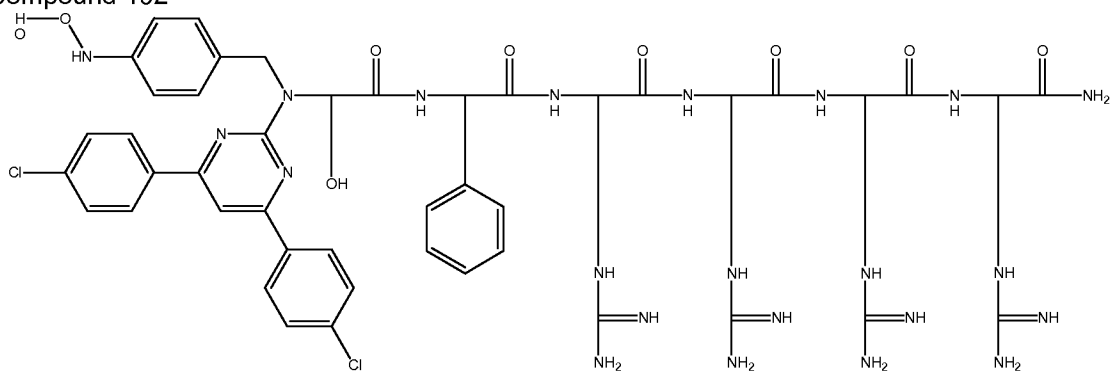
Compound 190



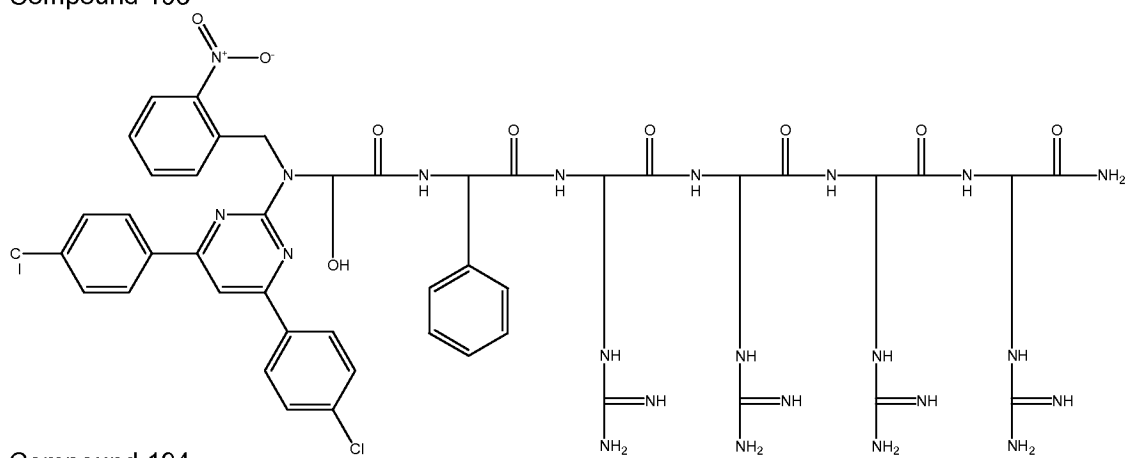
Compound 191



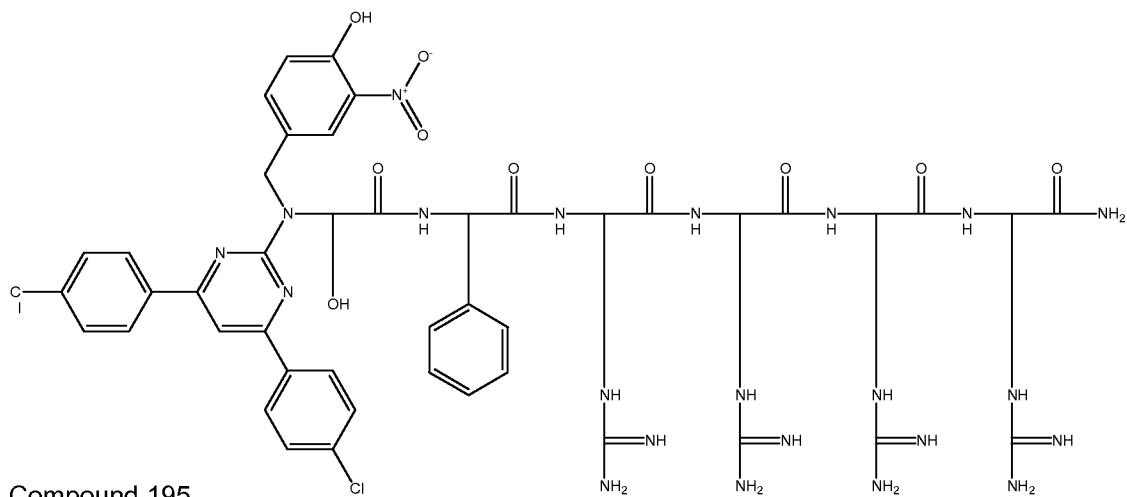
Compound 192



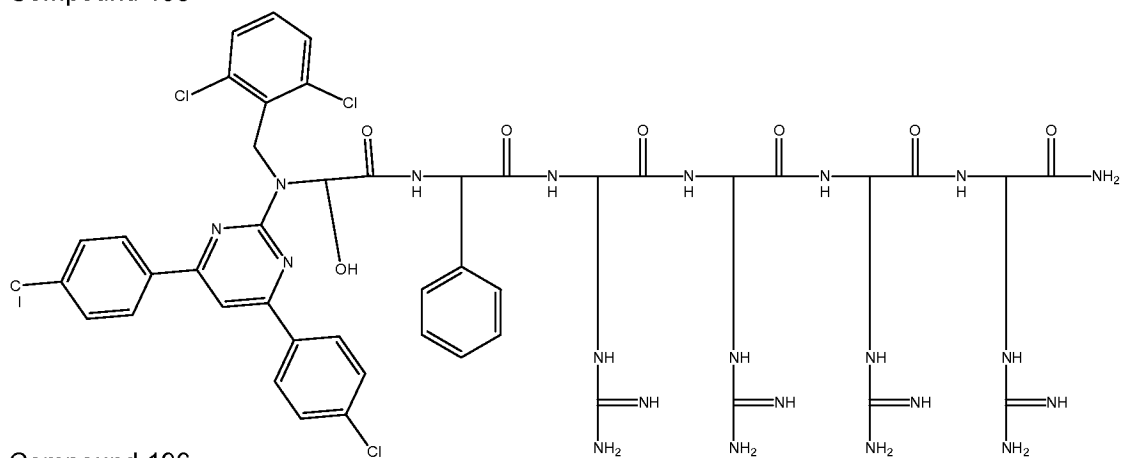
Compound 193



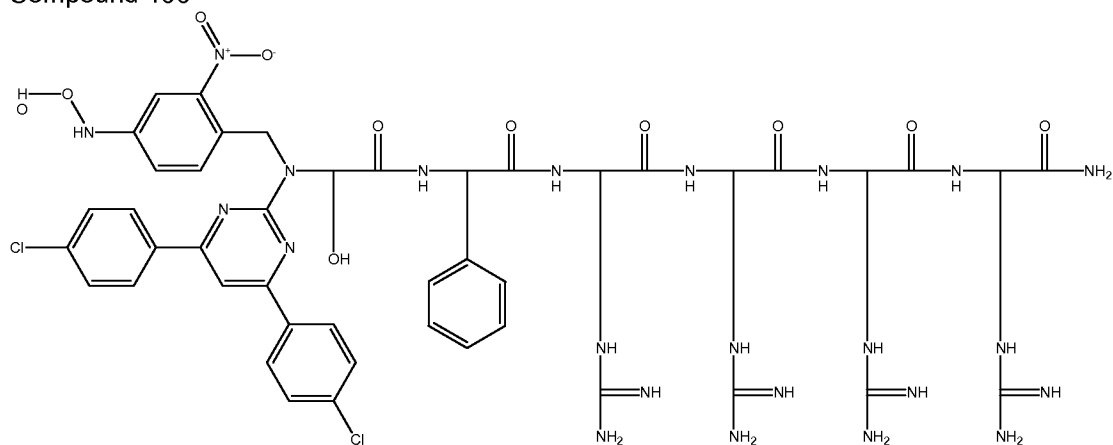
Compound 194



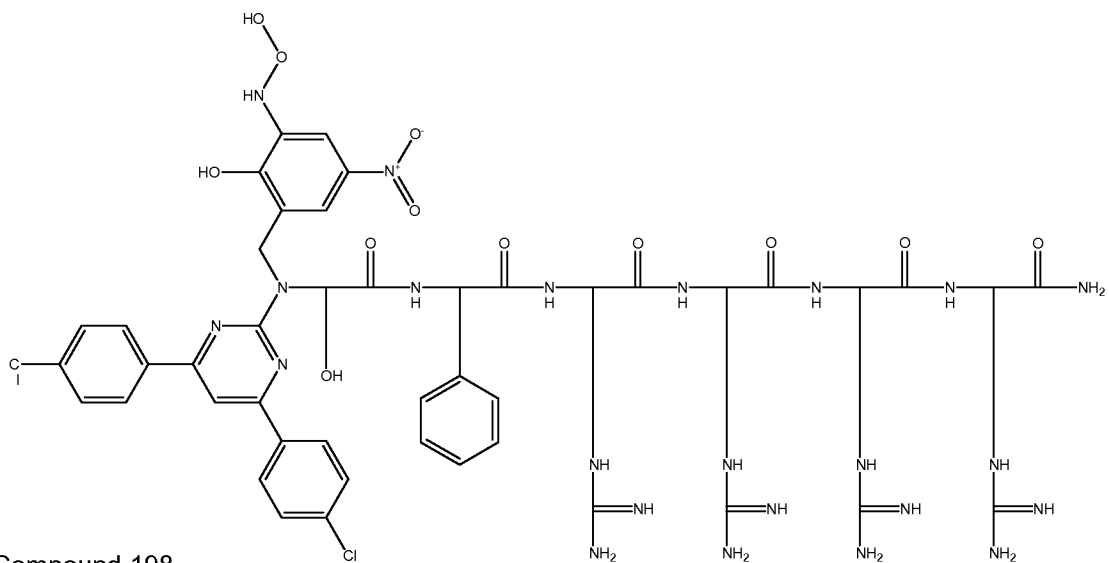
Compound 195



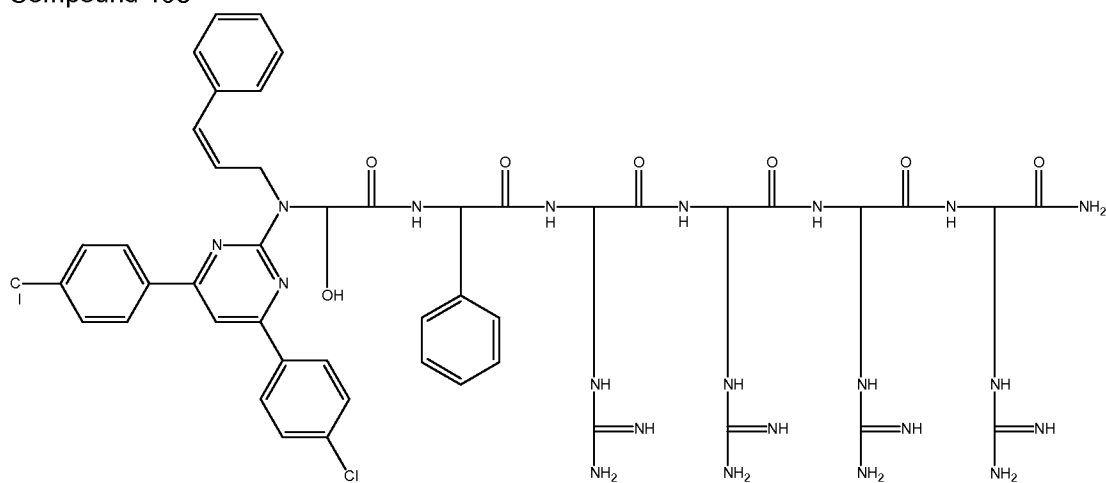
Compound 196



Compound 197

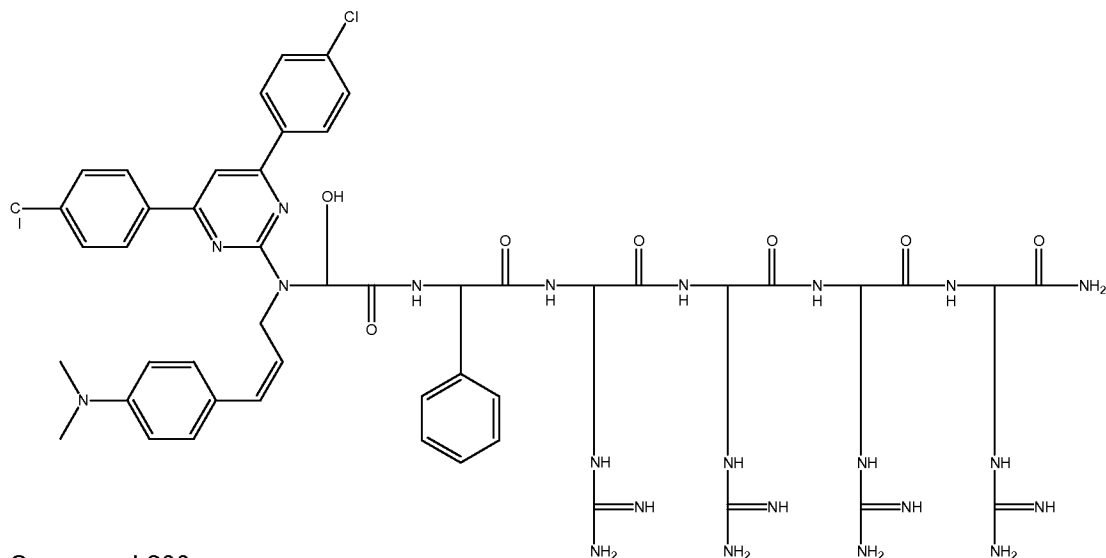


Compound 198

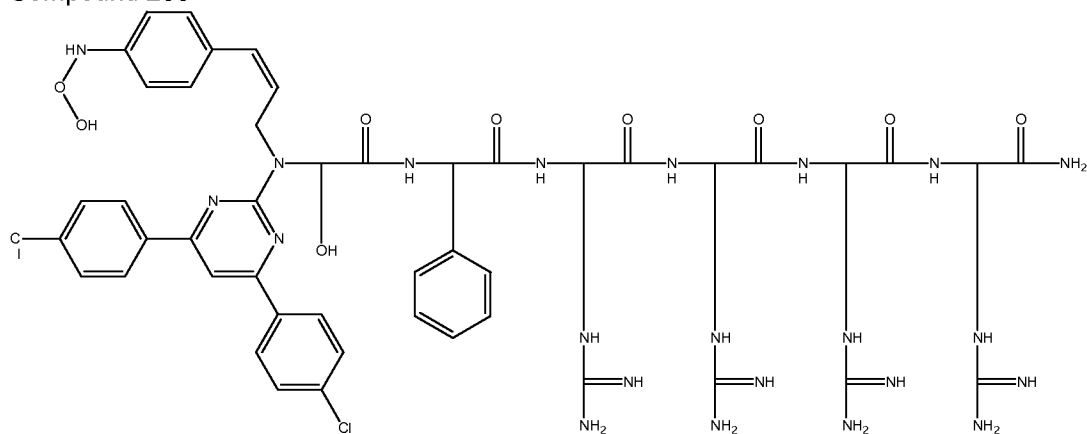


Compound 199

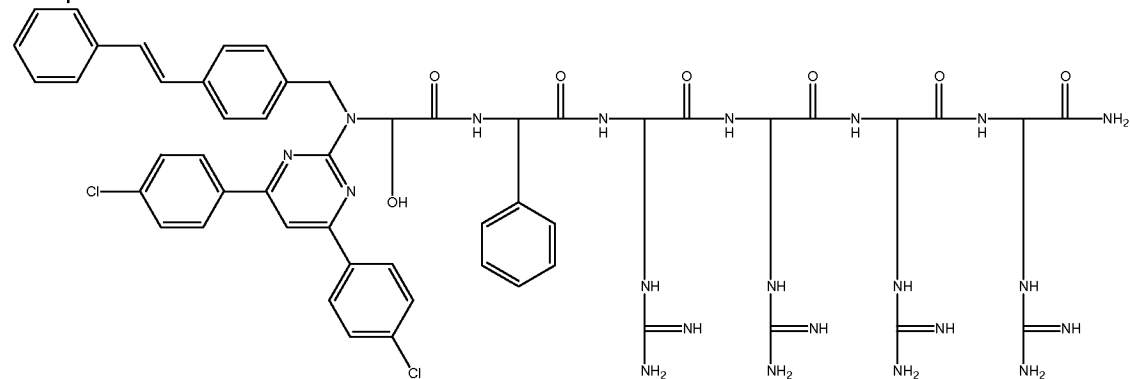
439227.1



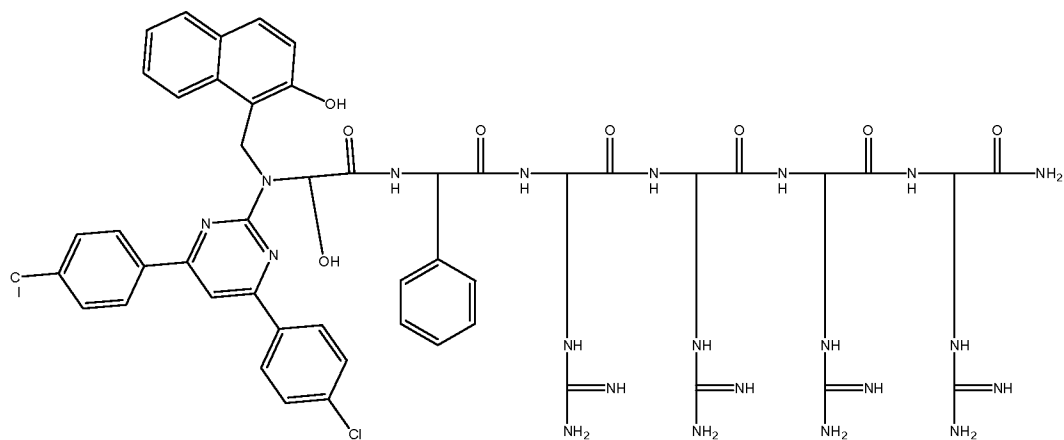
Compound 200



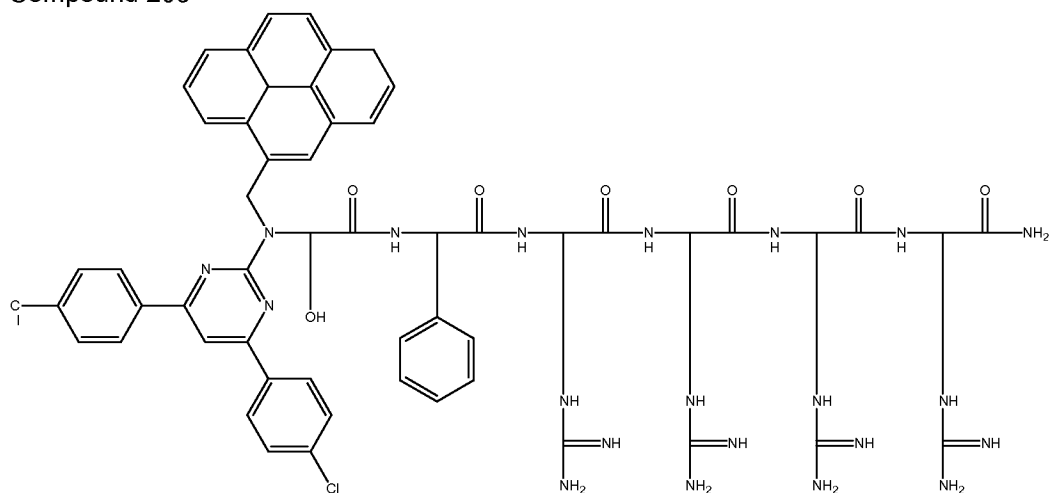
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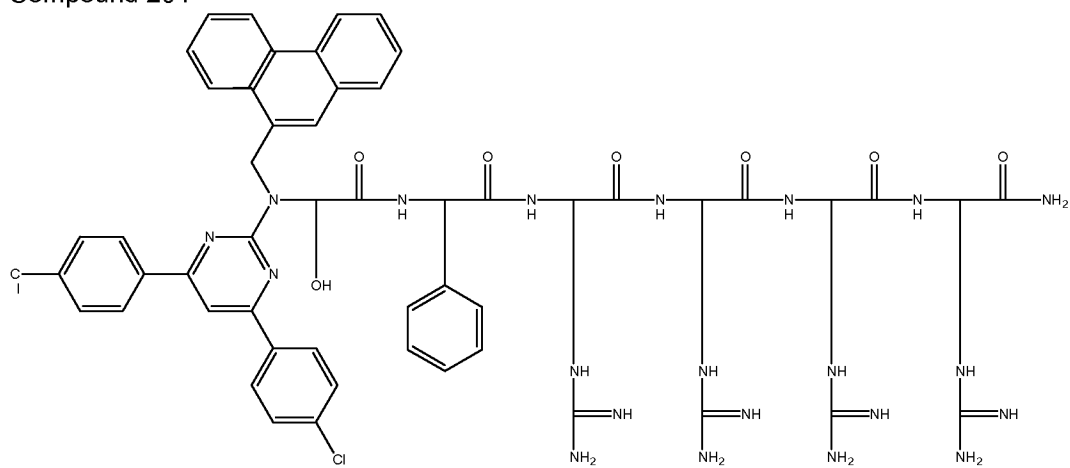
Compound 202



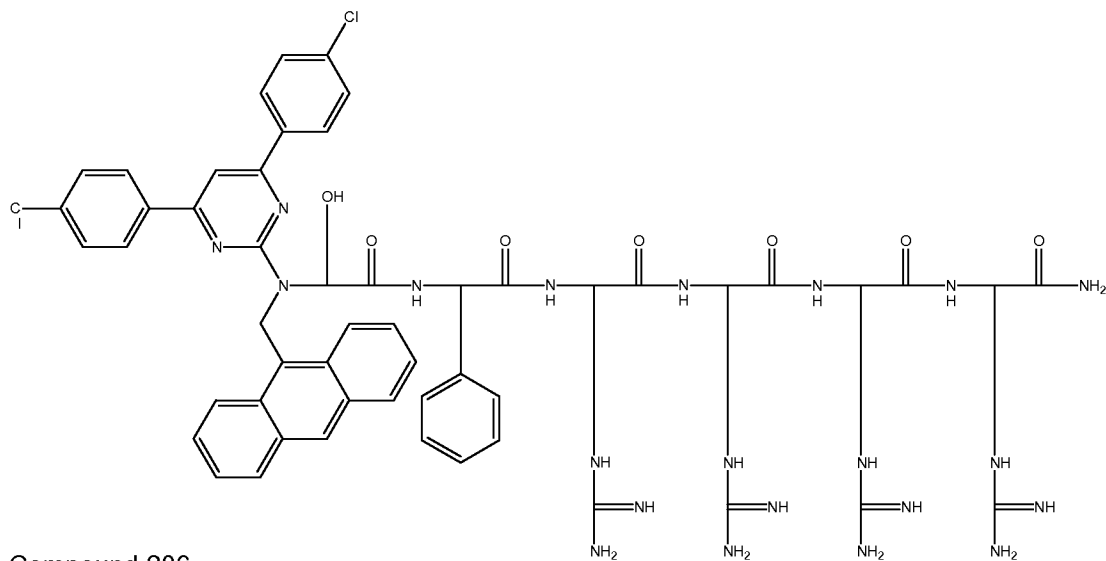
Compound 203



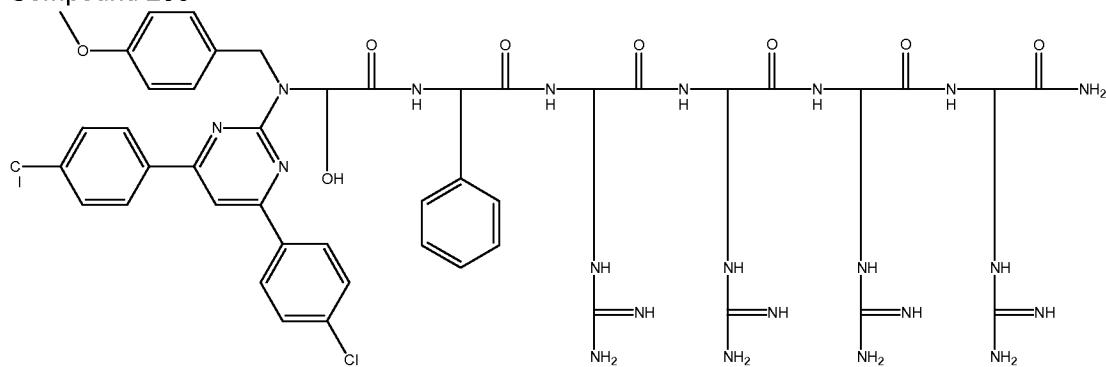
Compound 204



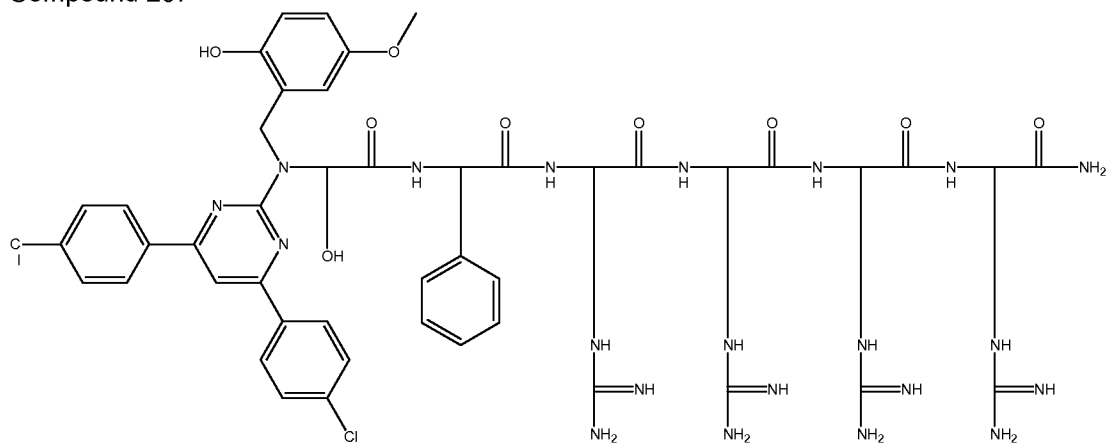
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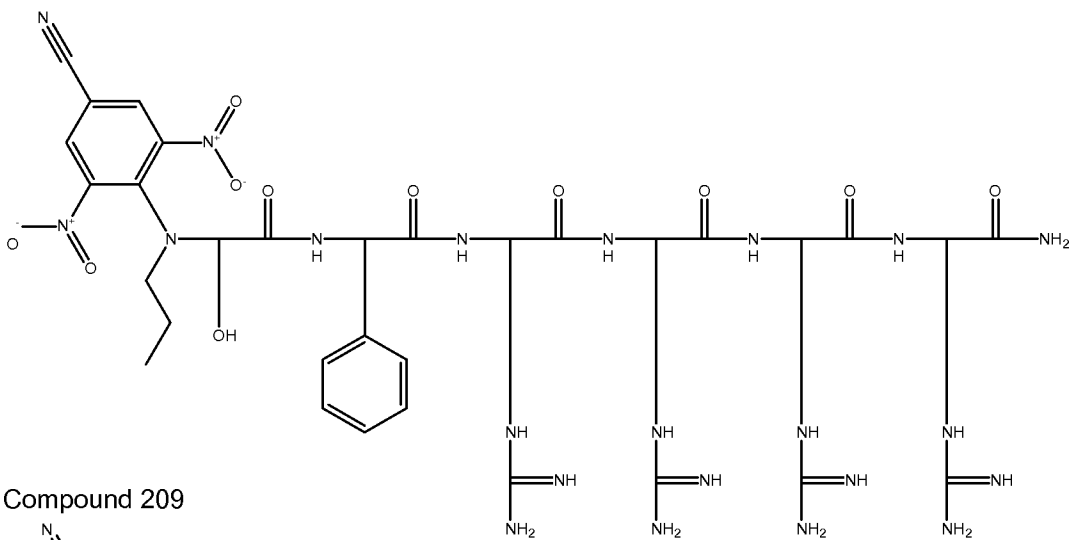
Compound 206



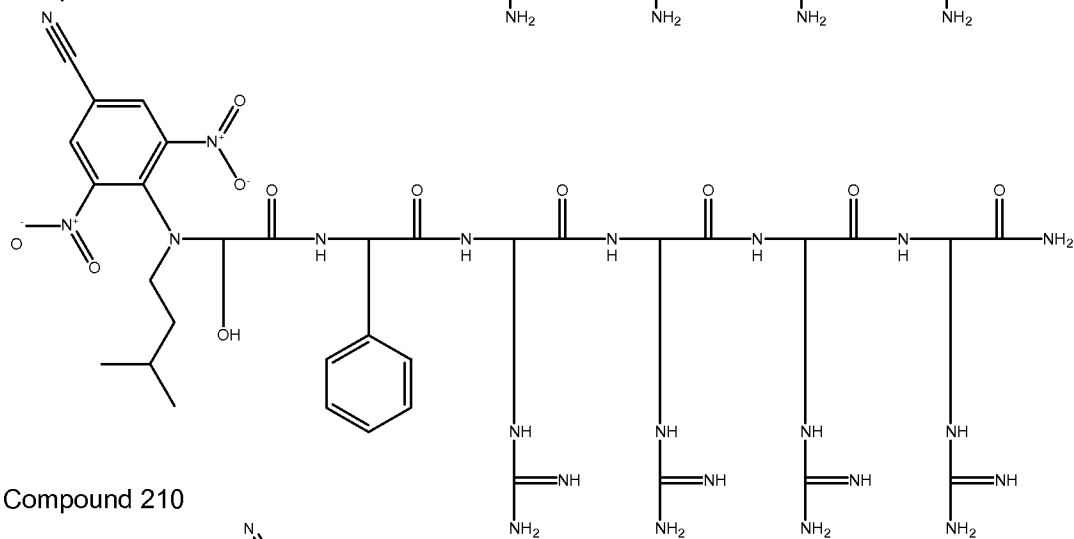
Compound 207



Compound 208

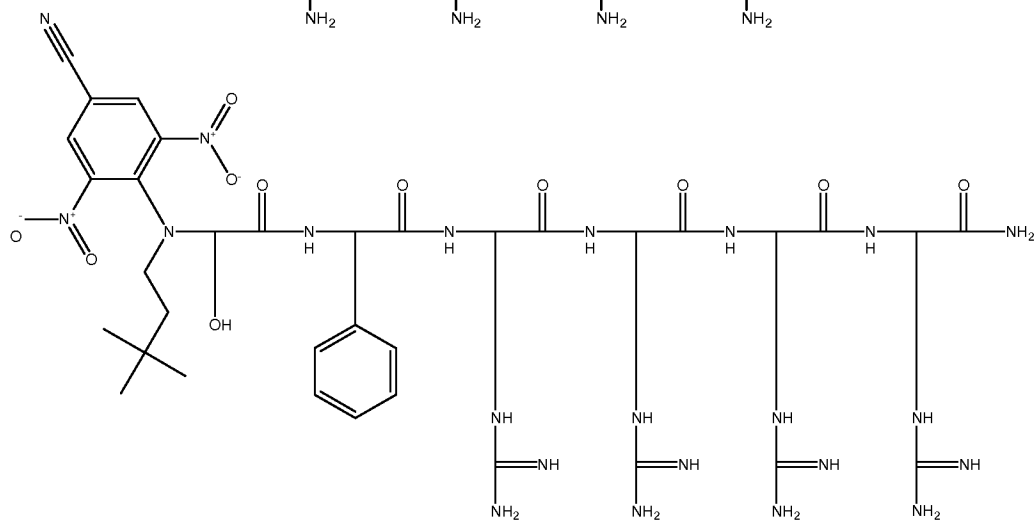


Compound 209

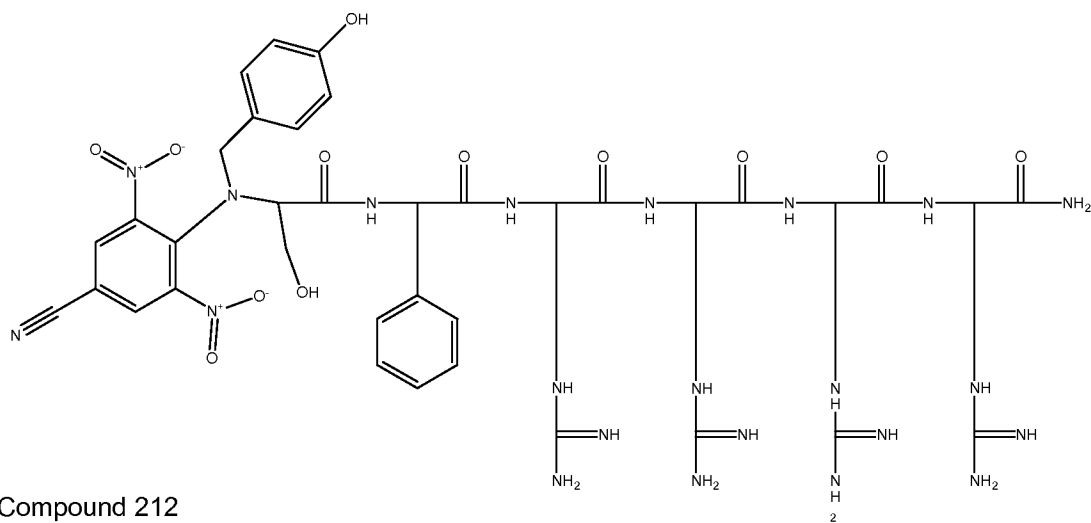


Compound 210

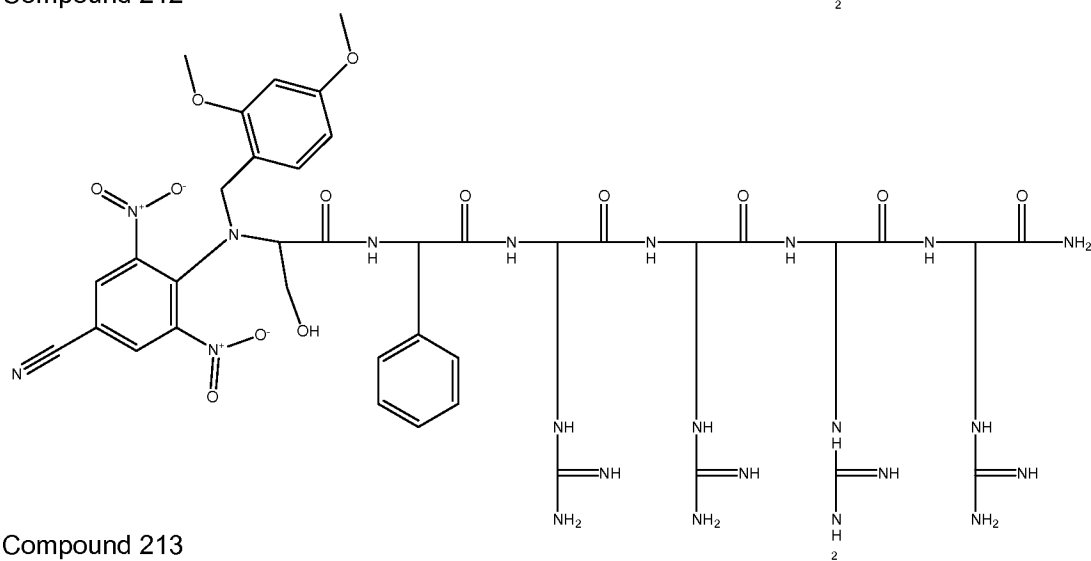
Compound 211



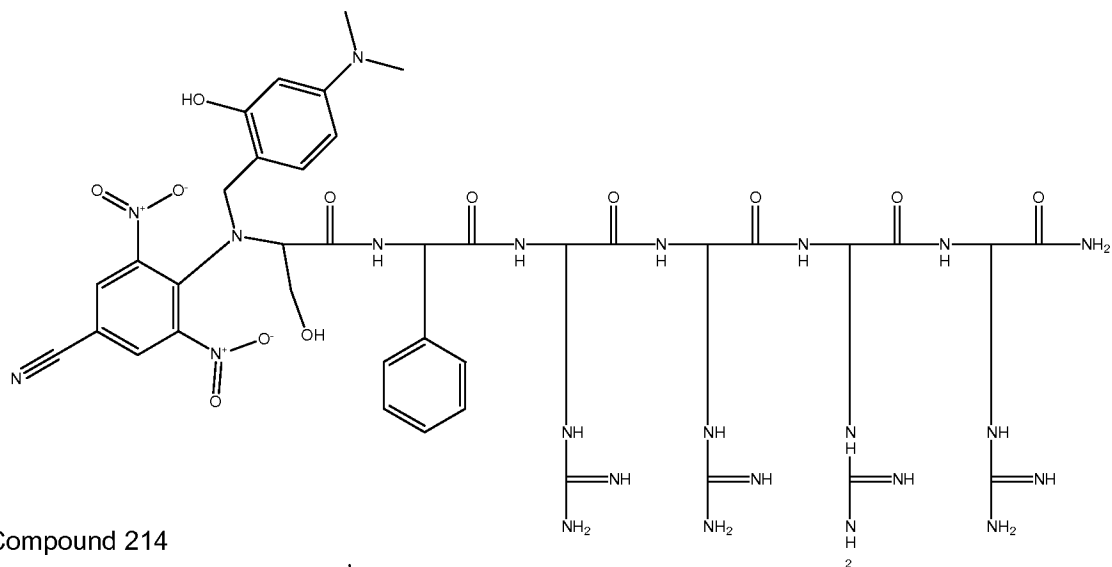
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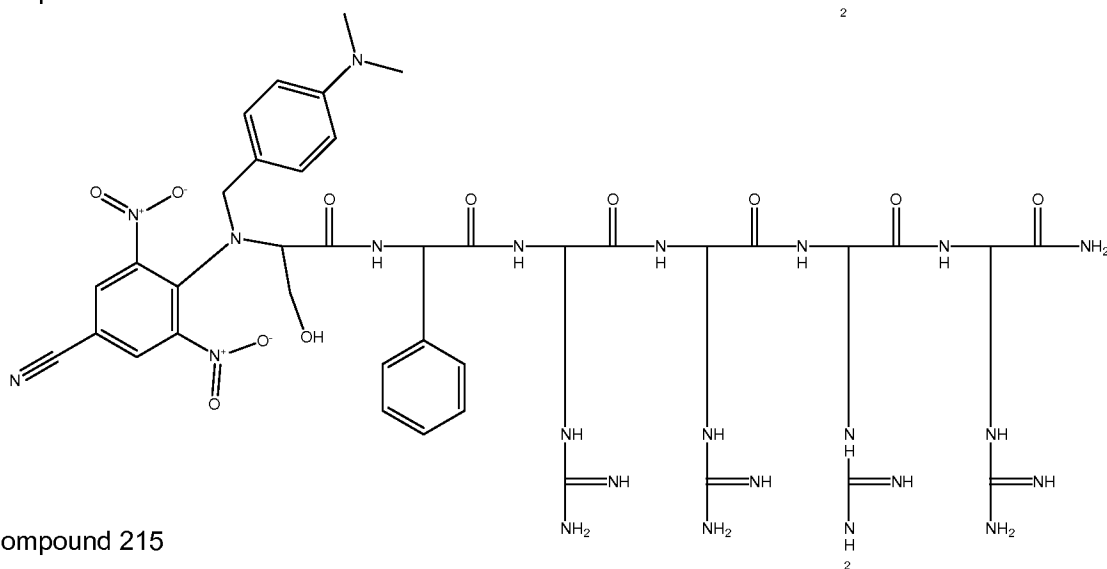
Compound 212



Compound 213

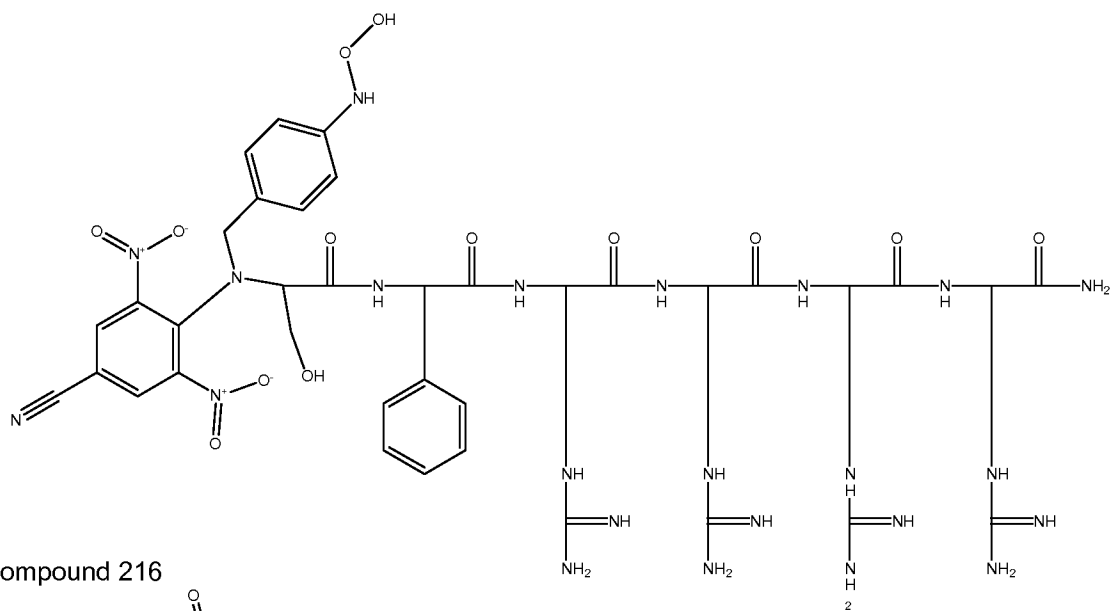


Compound 214

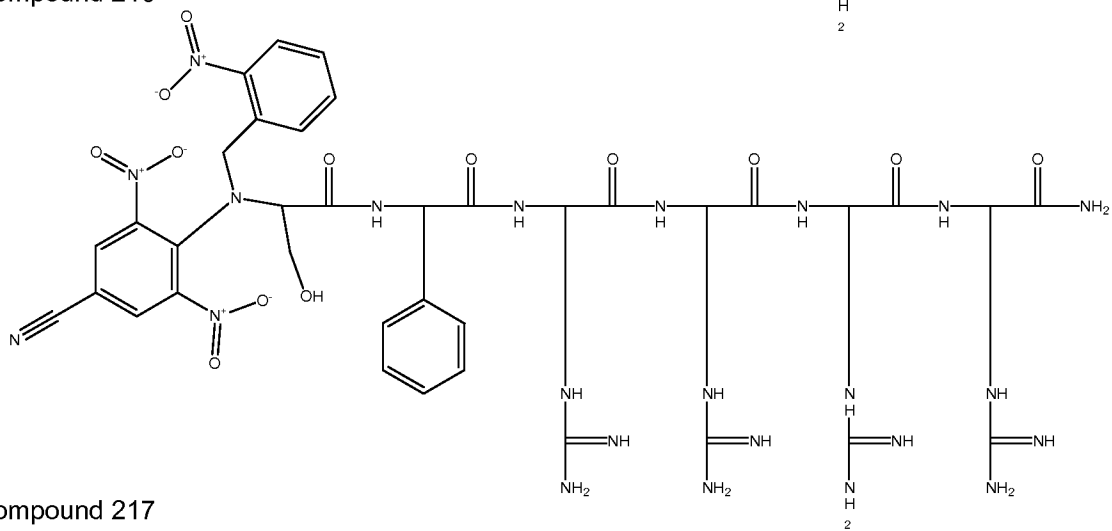


Compound 215

439227.1

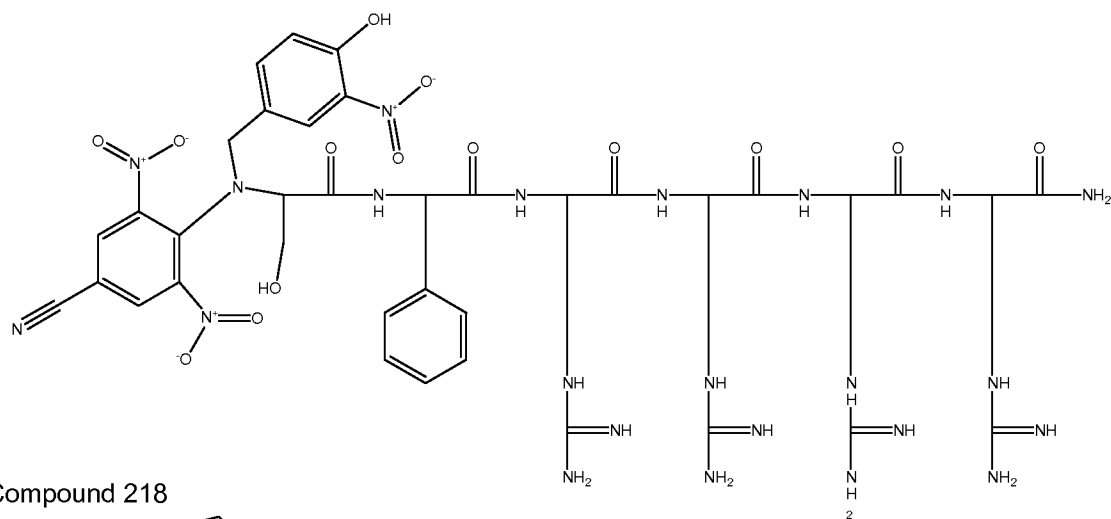


Compound 216

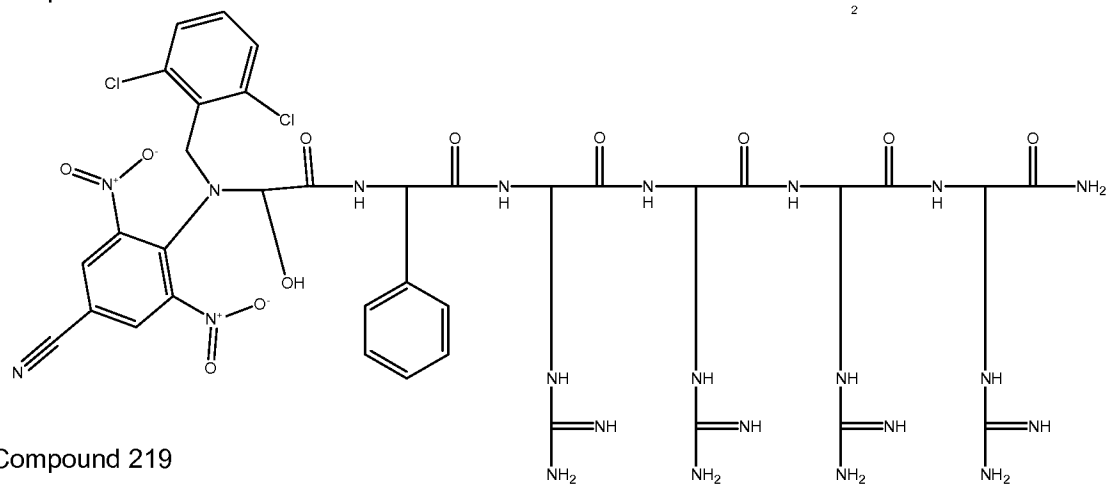


Compound 217

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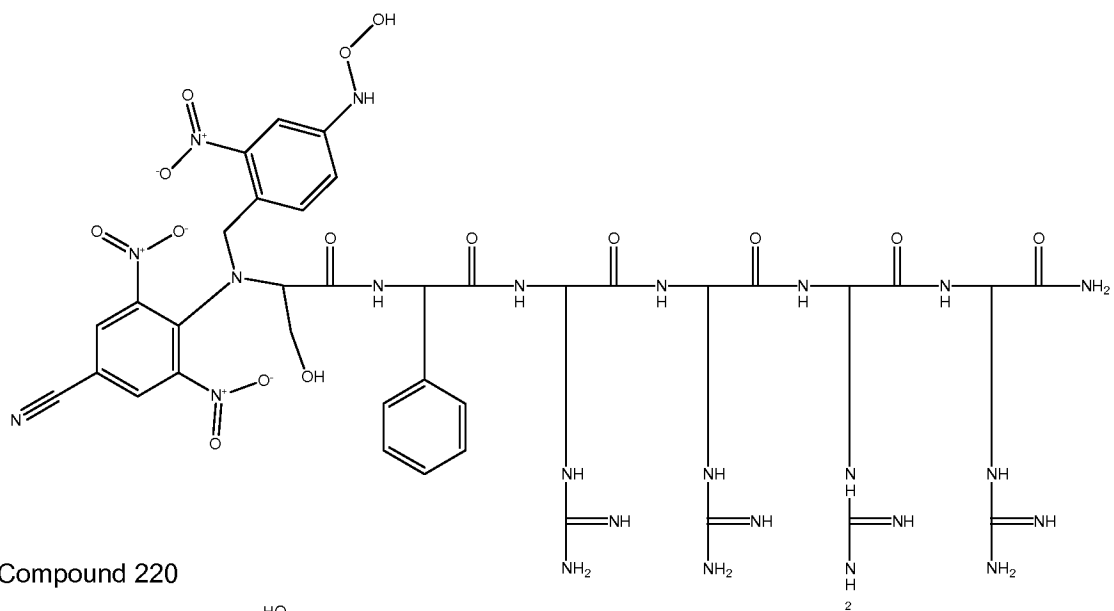


Compound 218

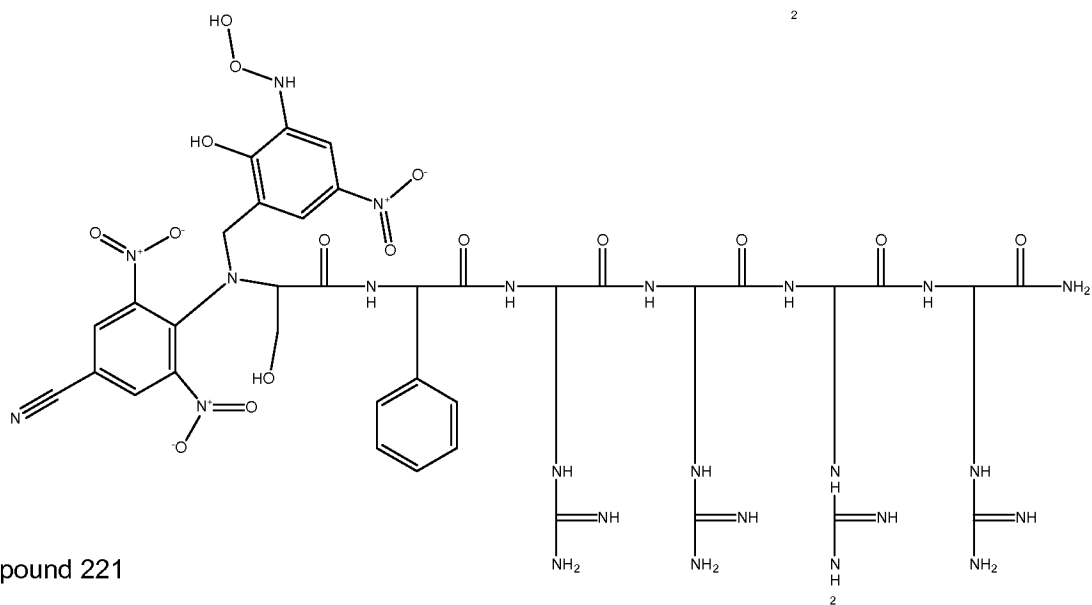


Compound 219

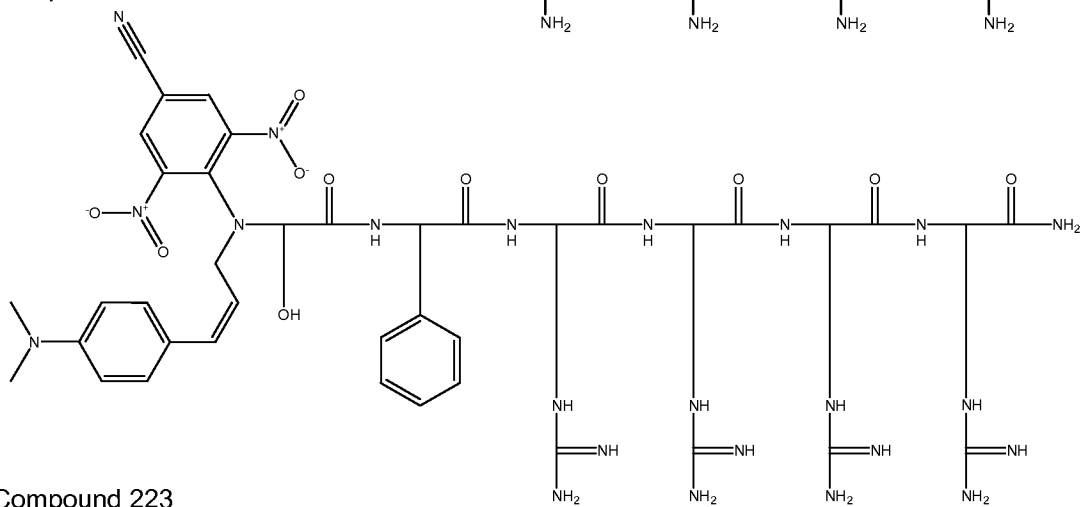
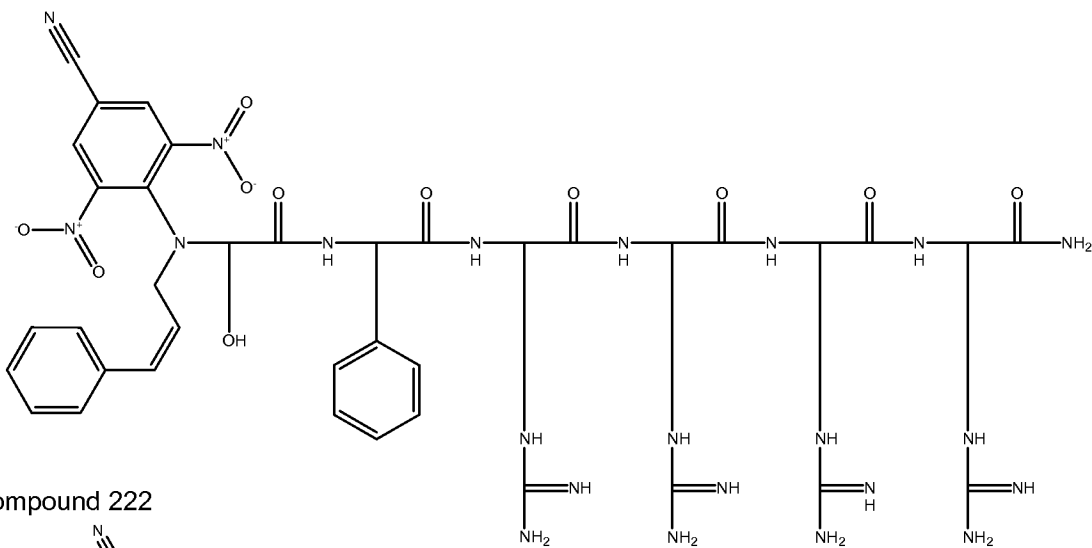
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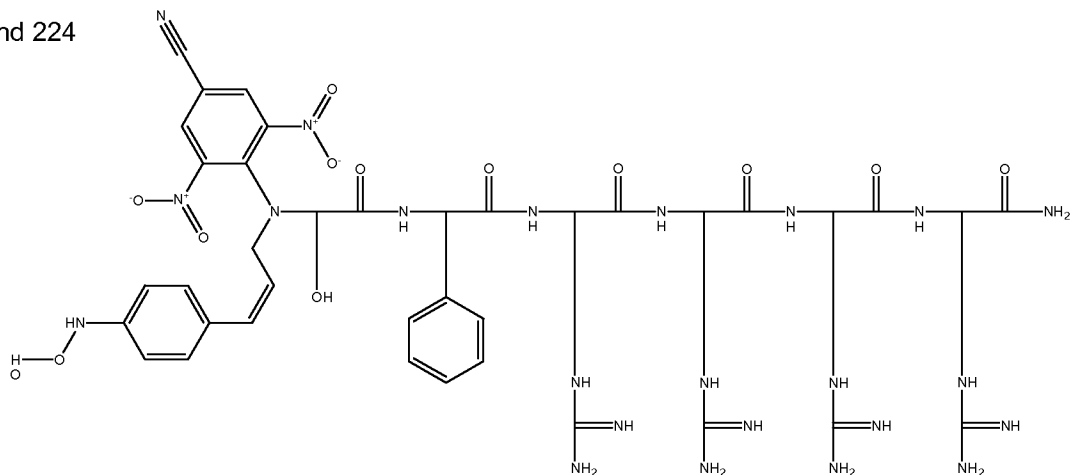
Compound 220

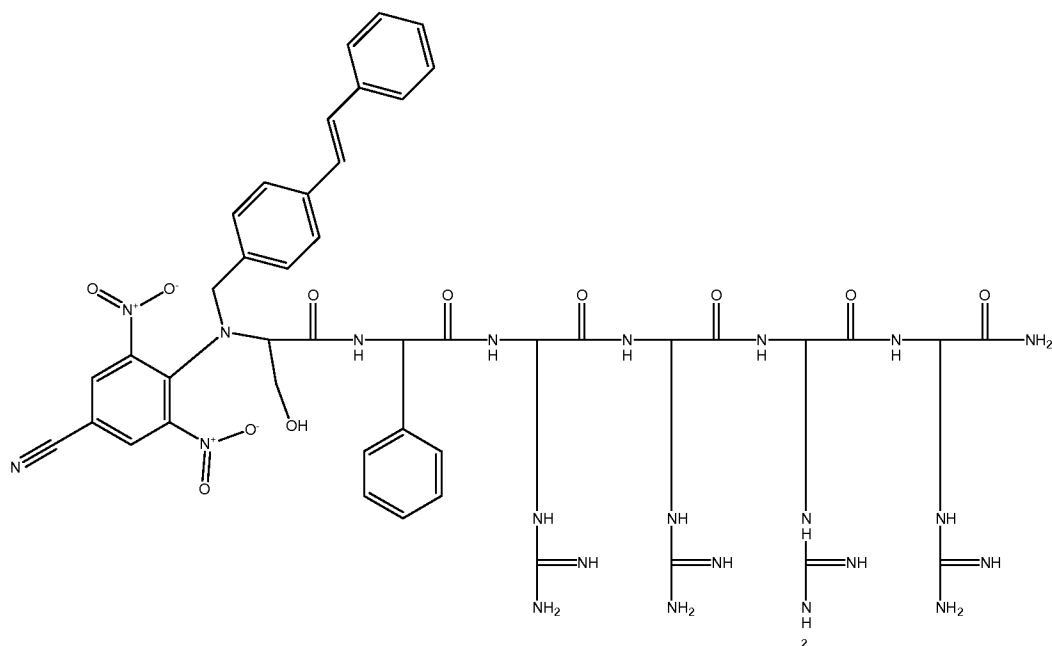


Compound 221

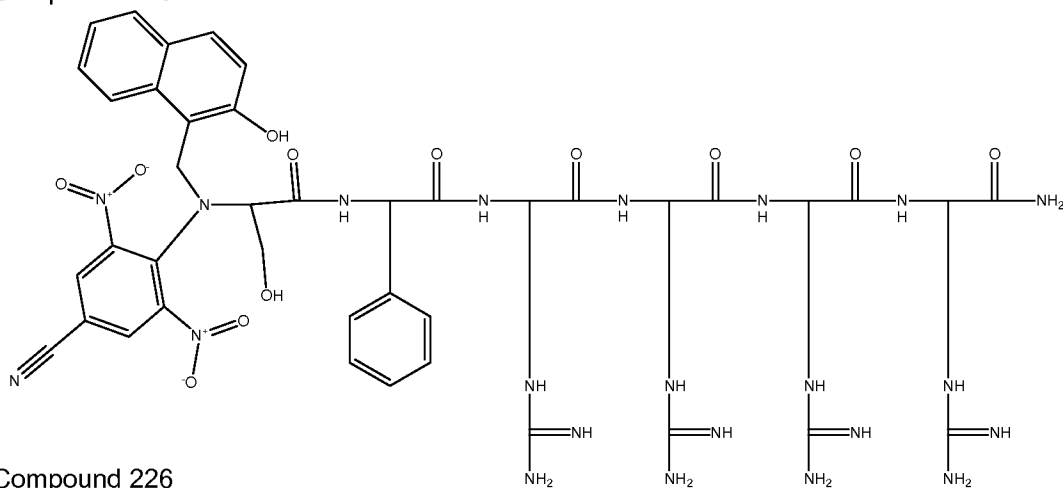


Compound 224

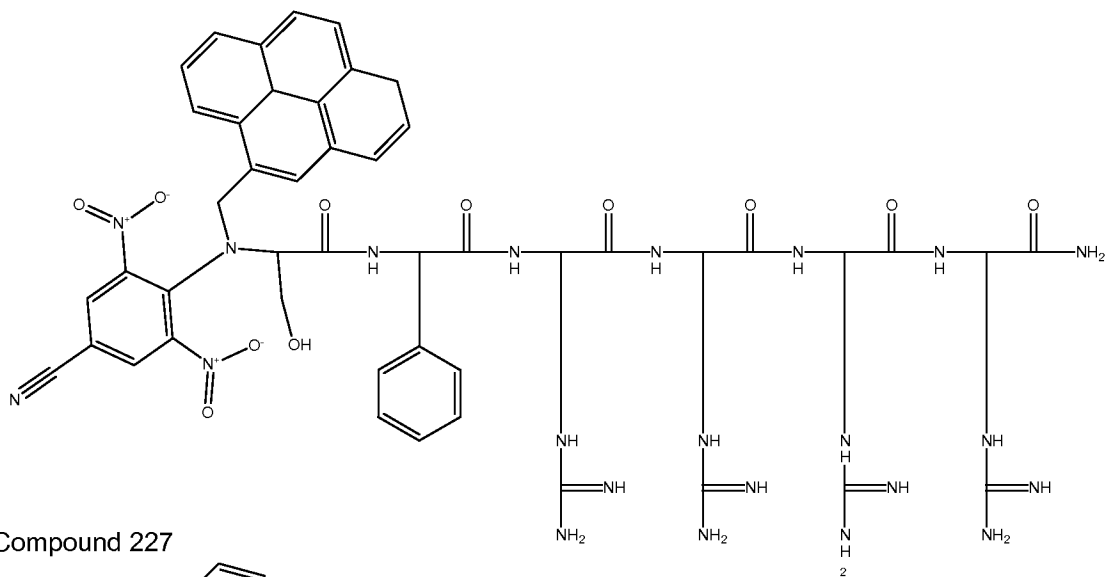




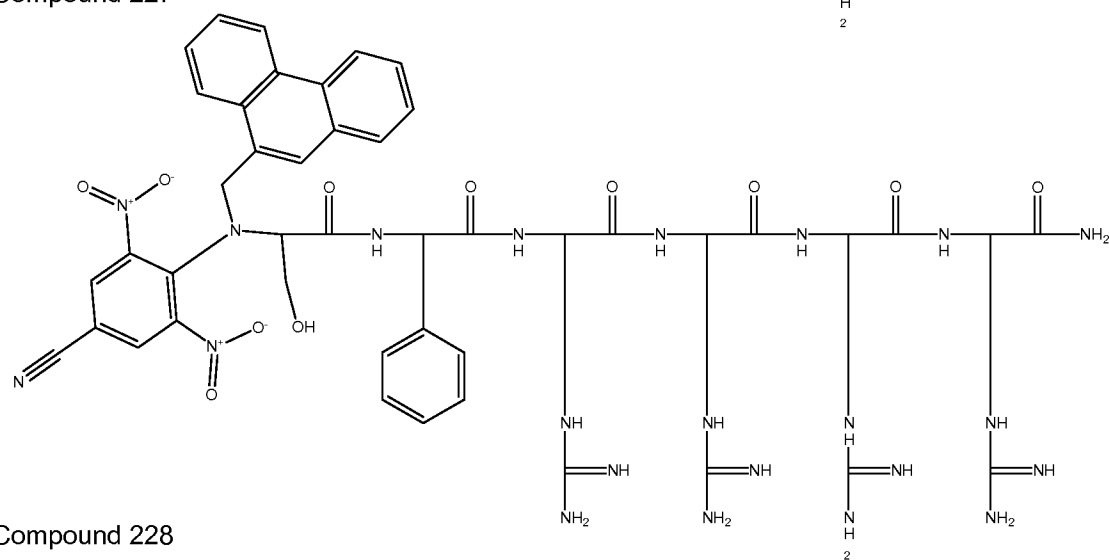
Compound 225



Compound 226

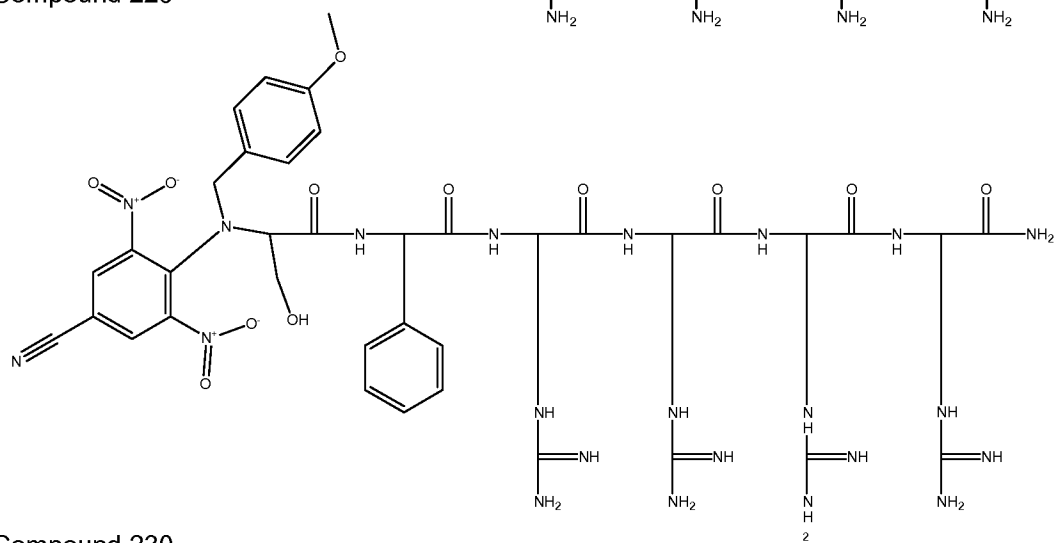
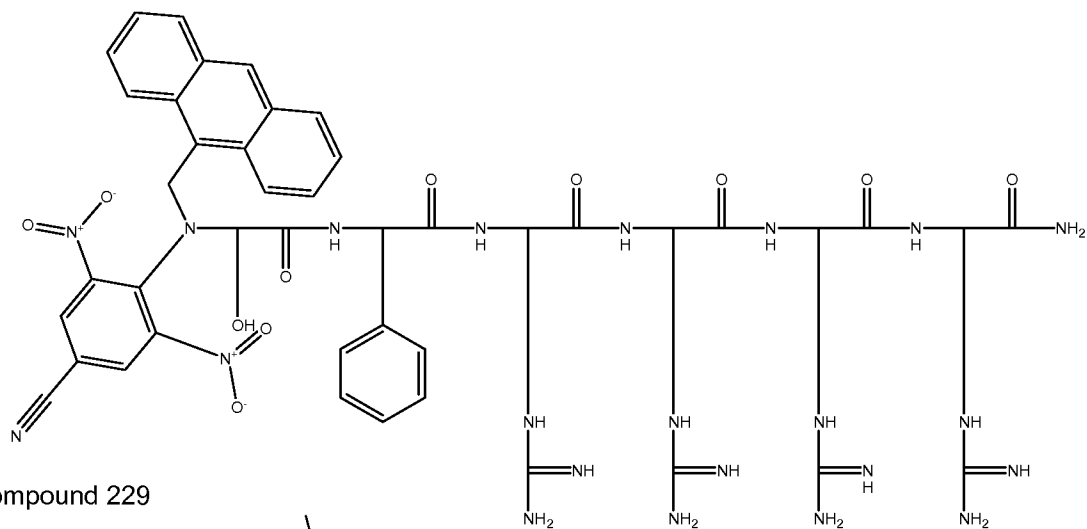


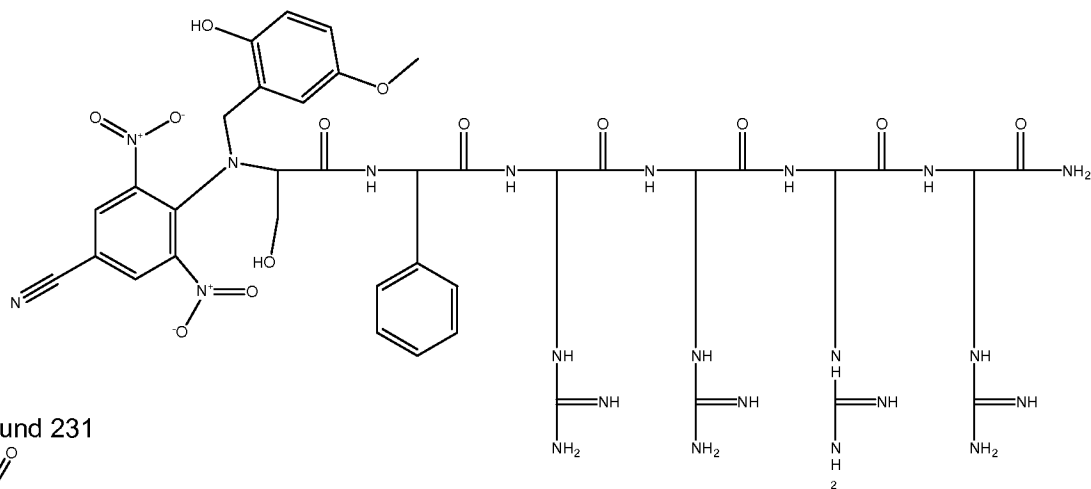
Compound 227



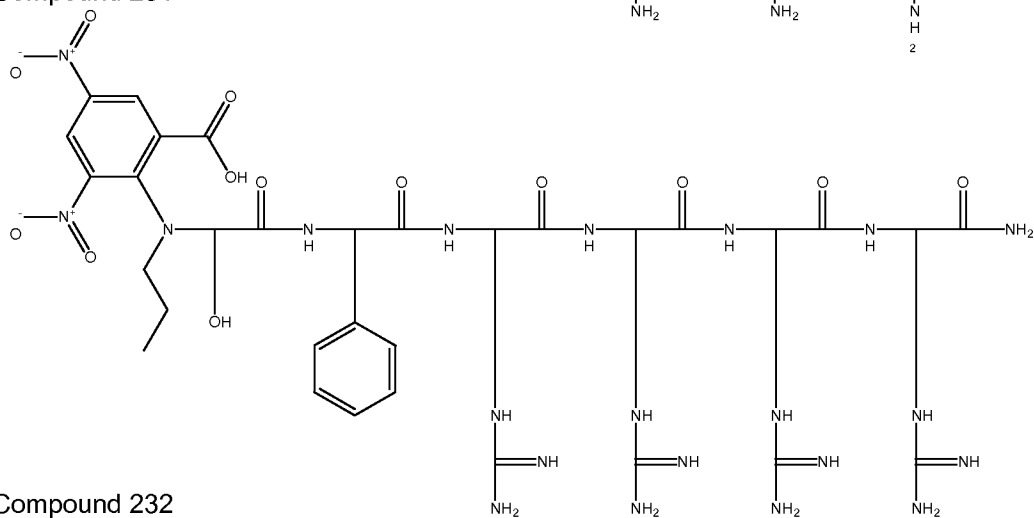
Compound 228

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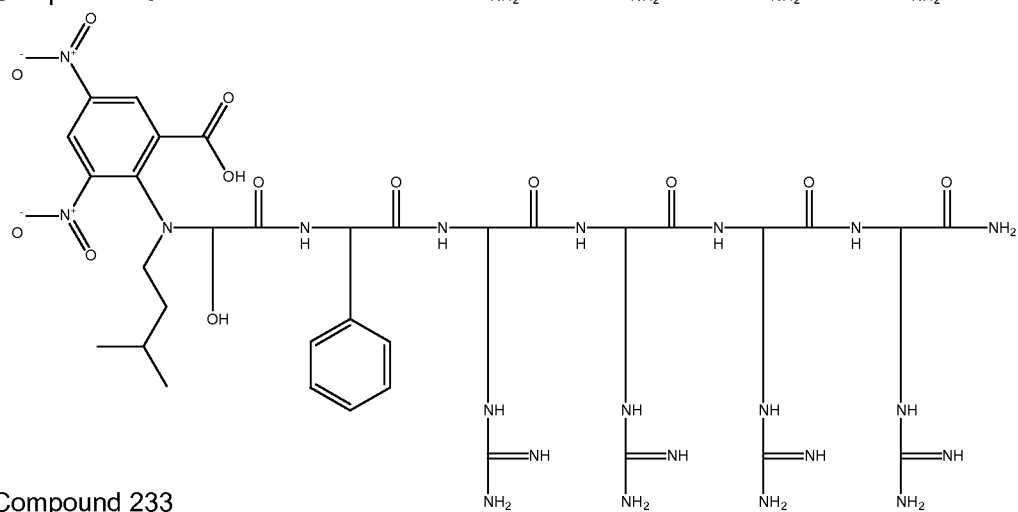




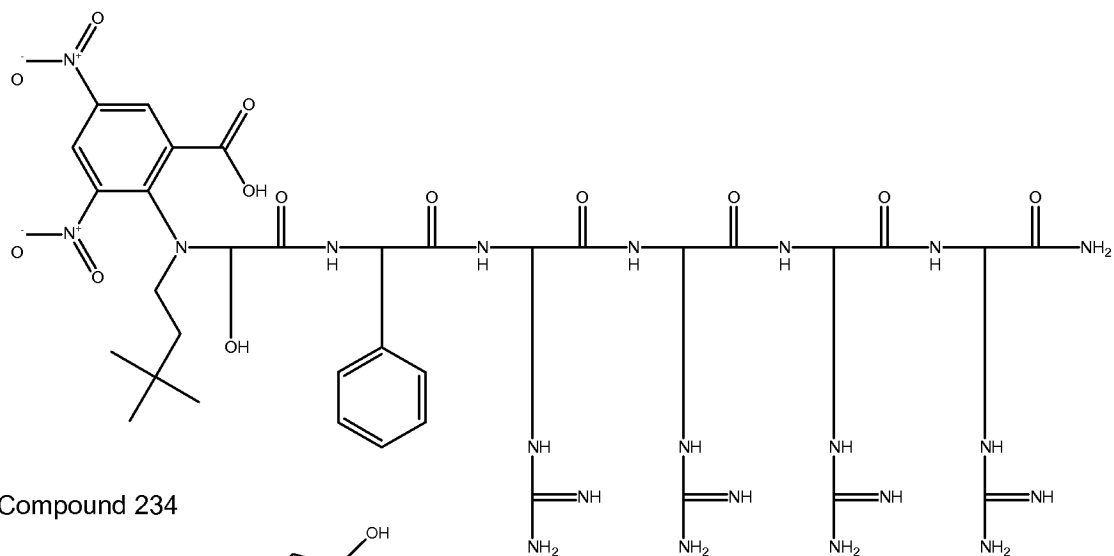
Compound 231



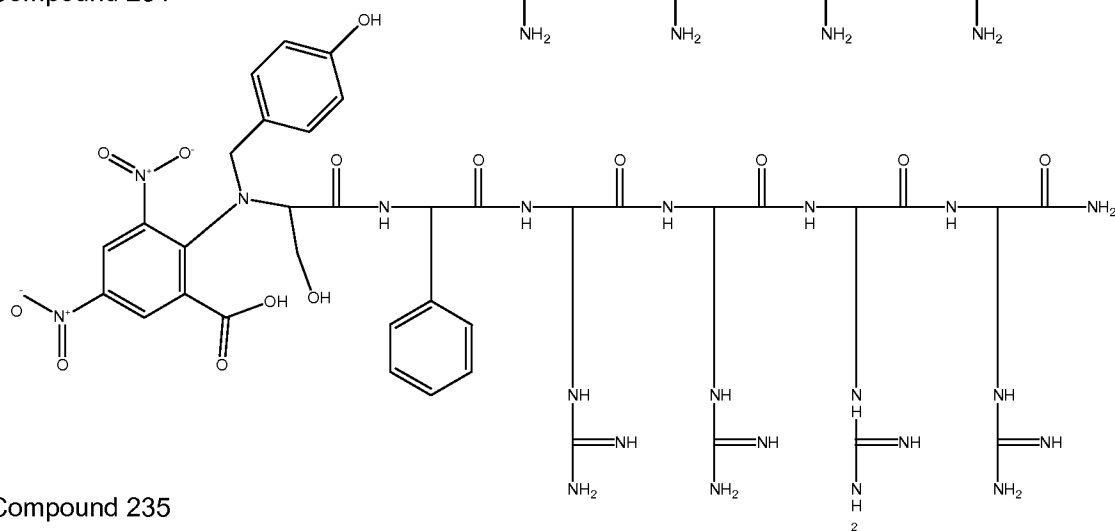
Compound 232



Compound 233

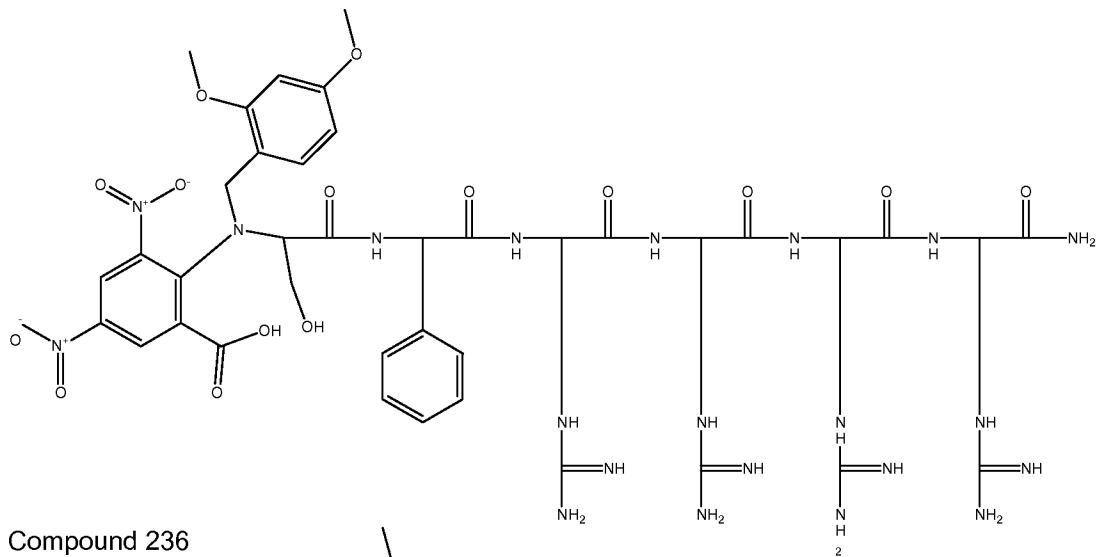


Compound 234

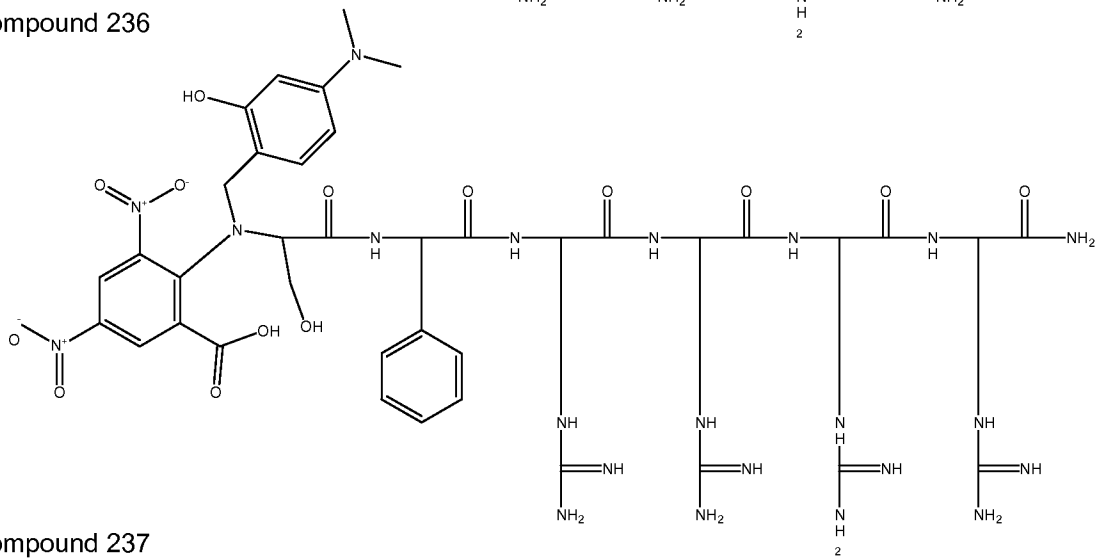


Compound 235

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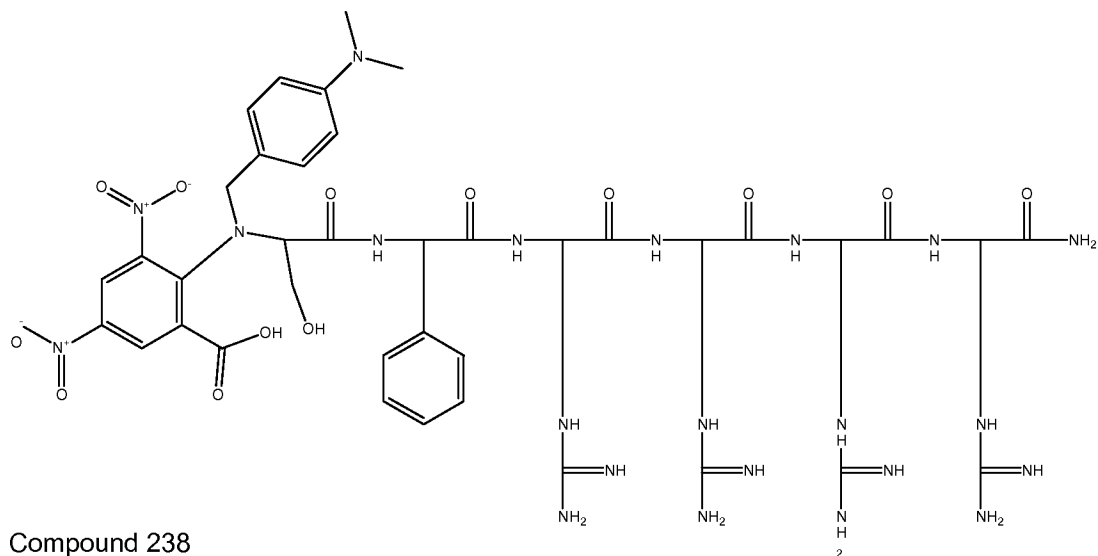


Compound 236

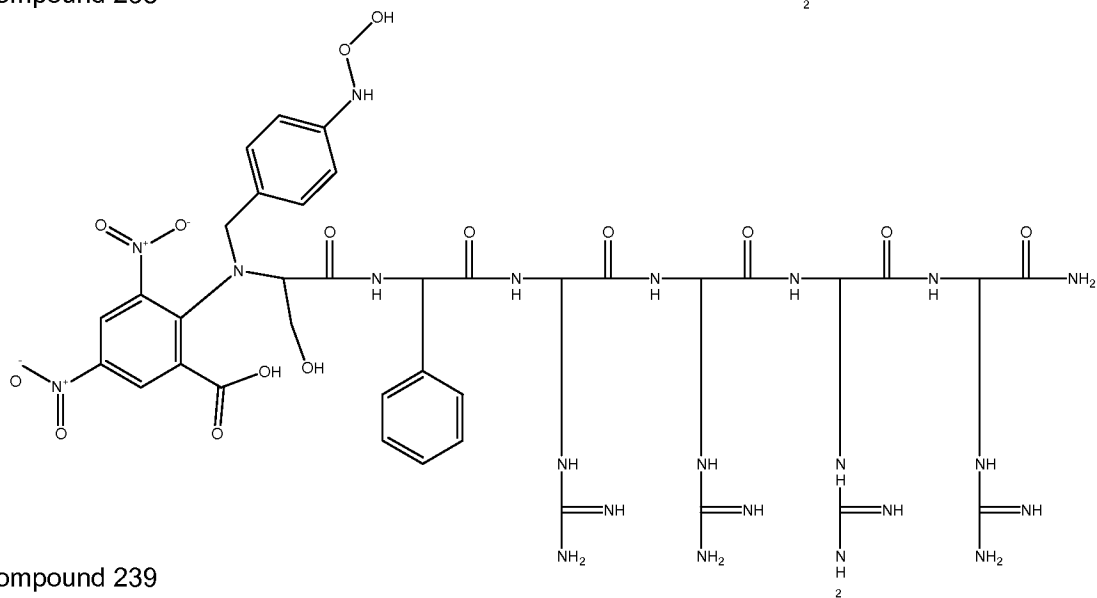


Compound 237

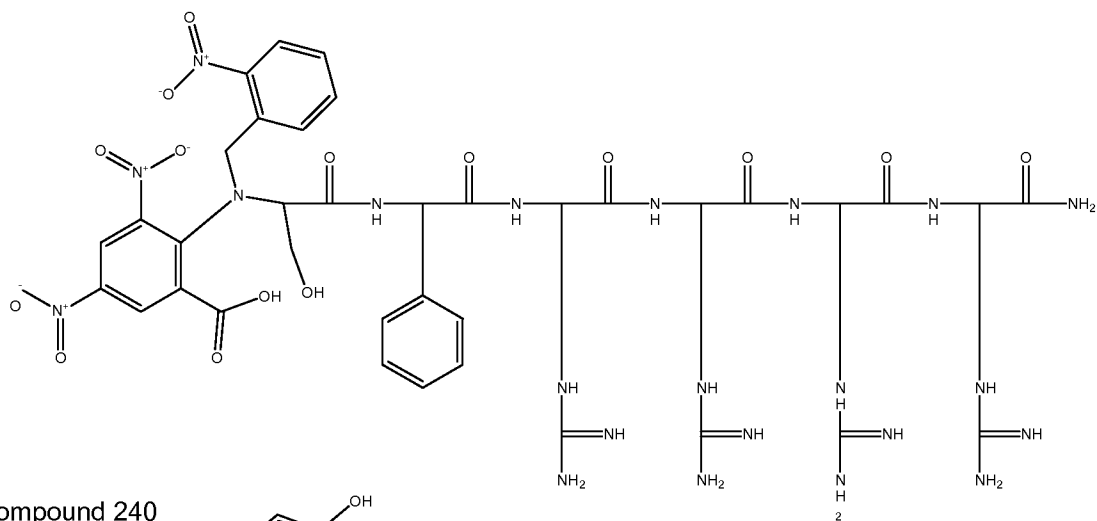
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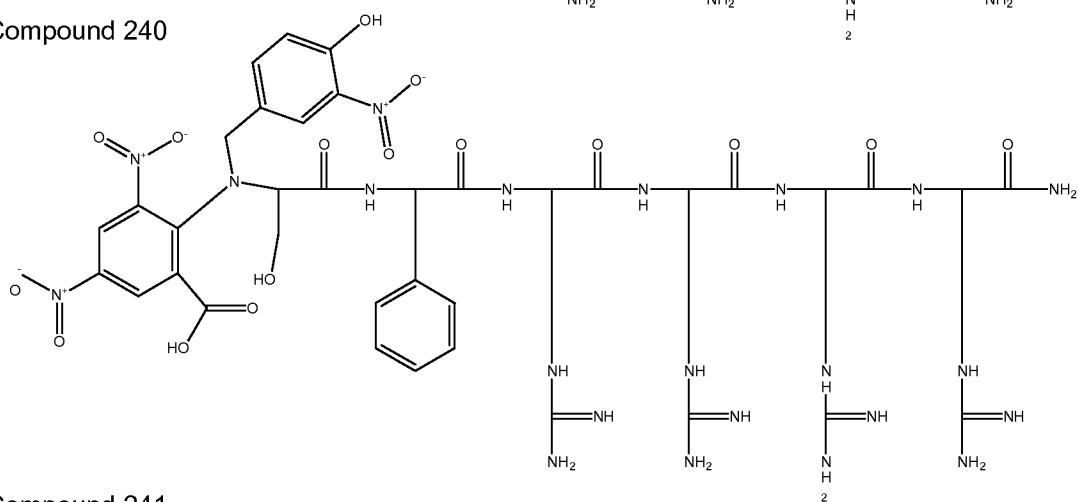
Compound 238



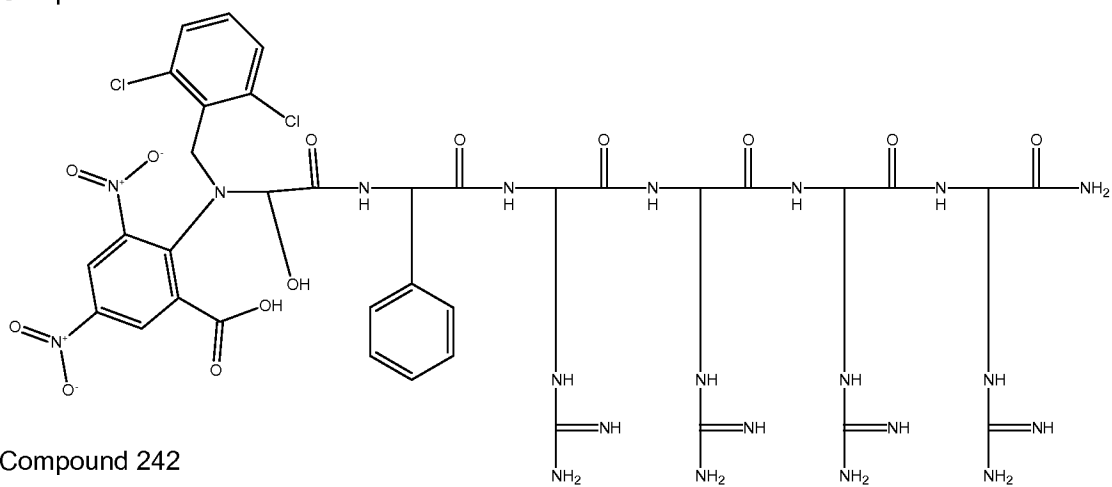
Compound 239



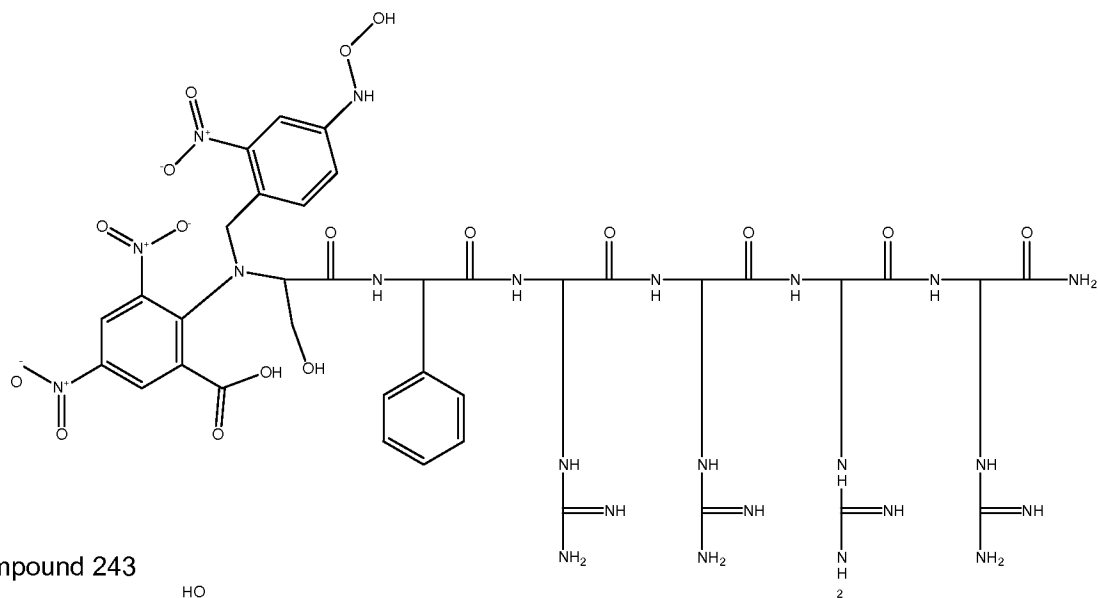
Compound 240



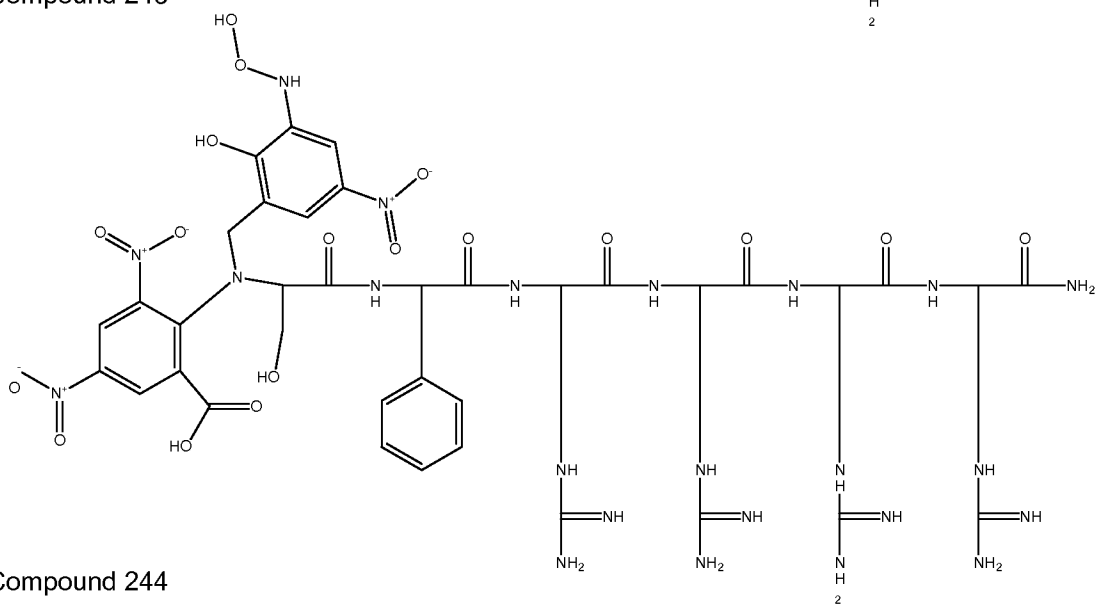
Compound 241



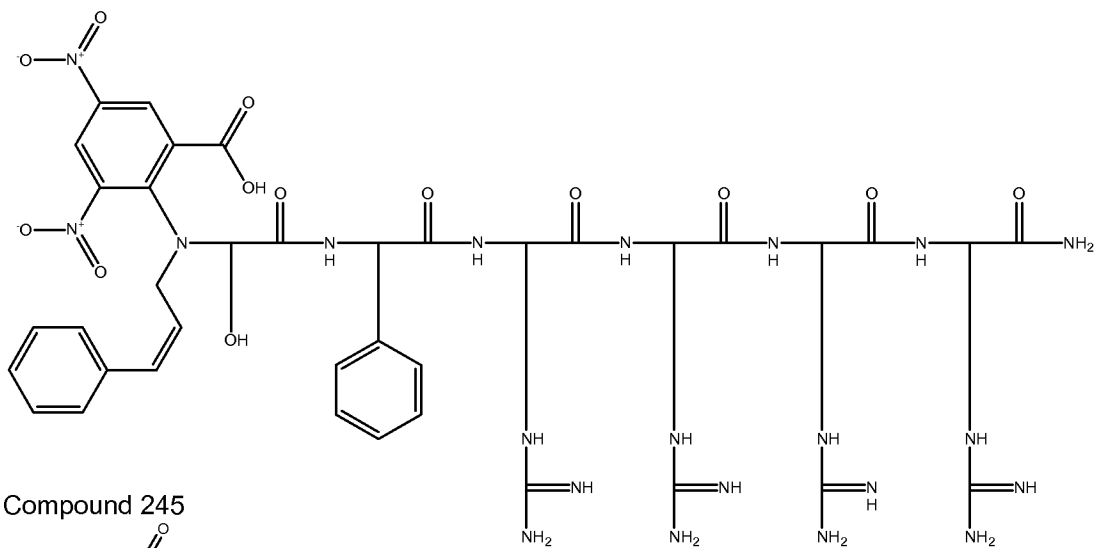
Compound 242



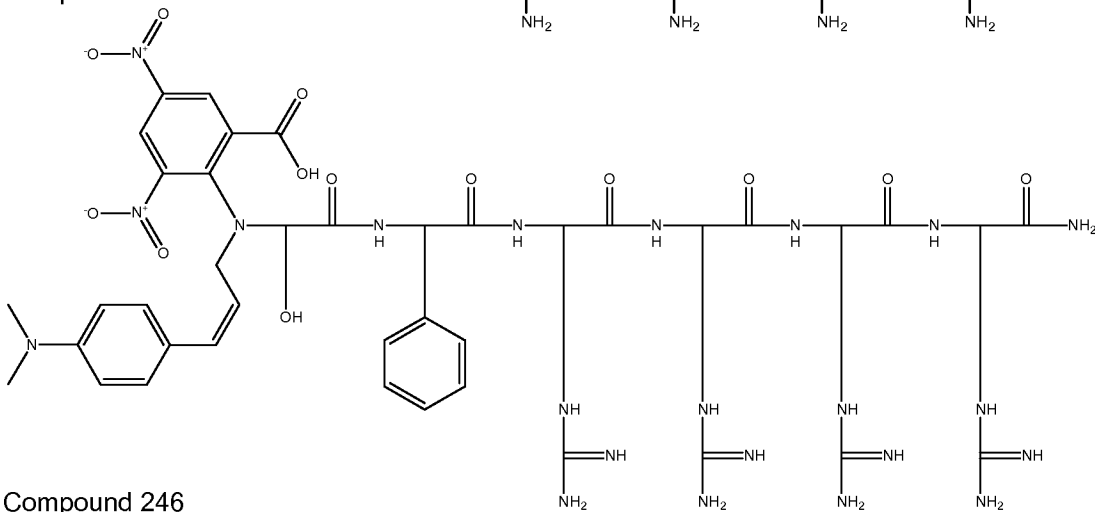
Compound 243



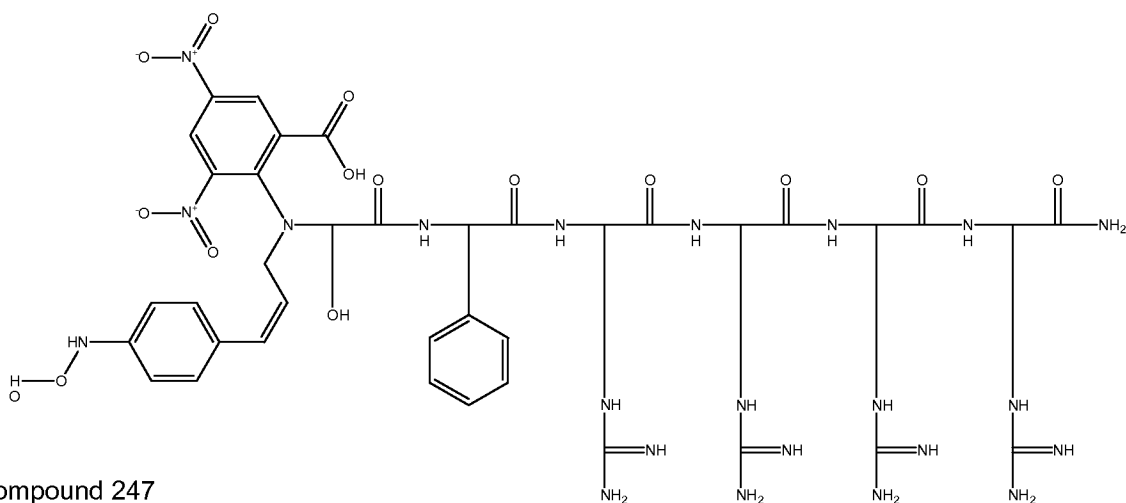
Compound 244



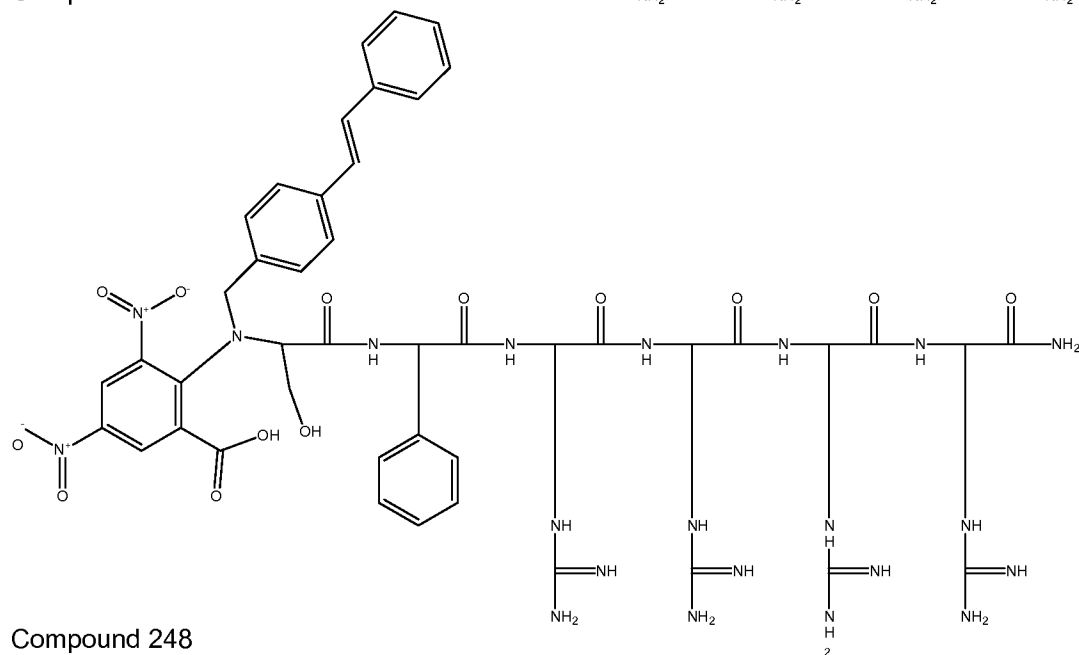
Compound 245



Compound 246

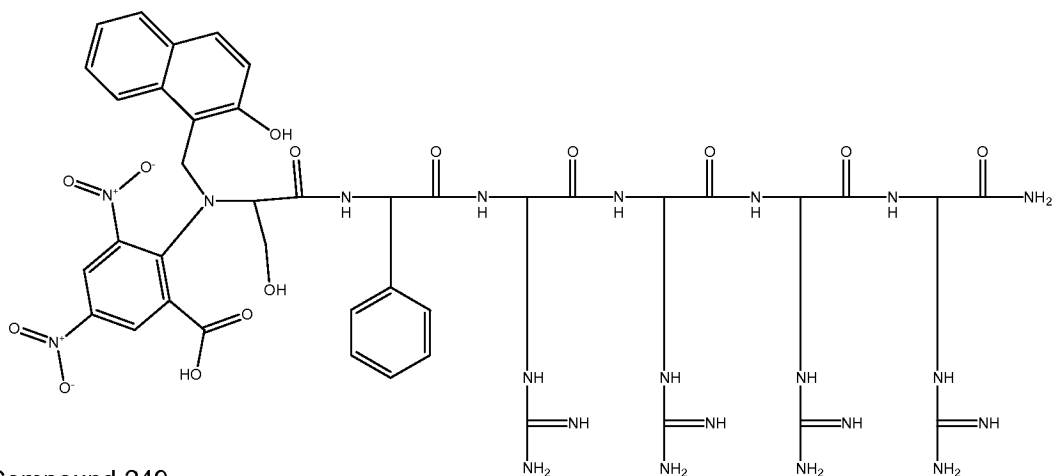


Compound 247

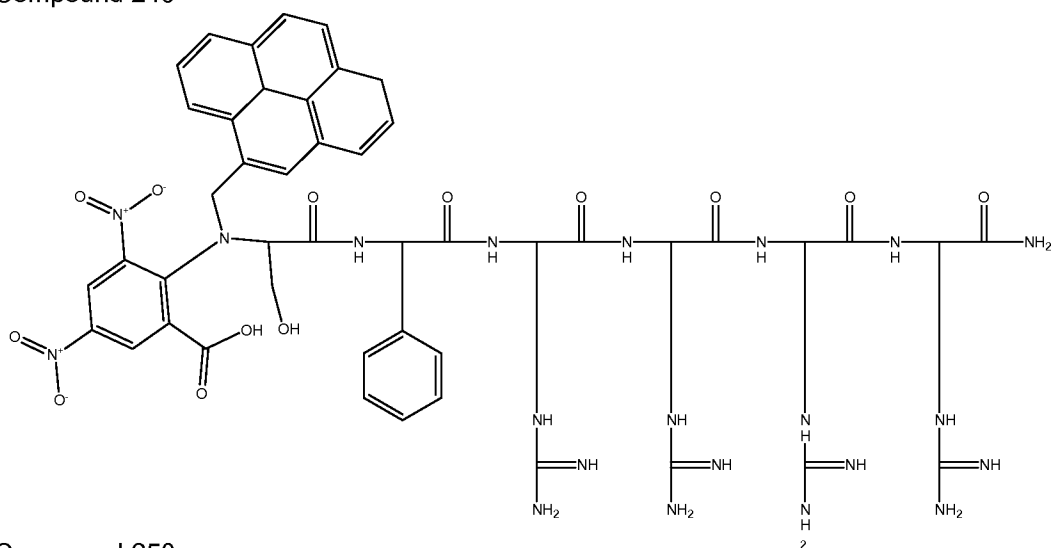


Compound 248

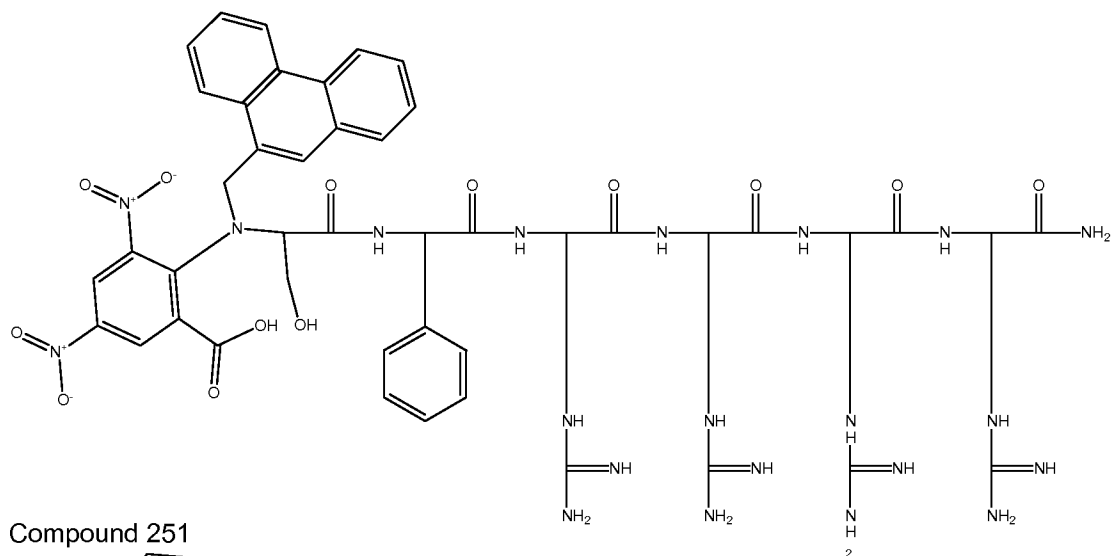
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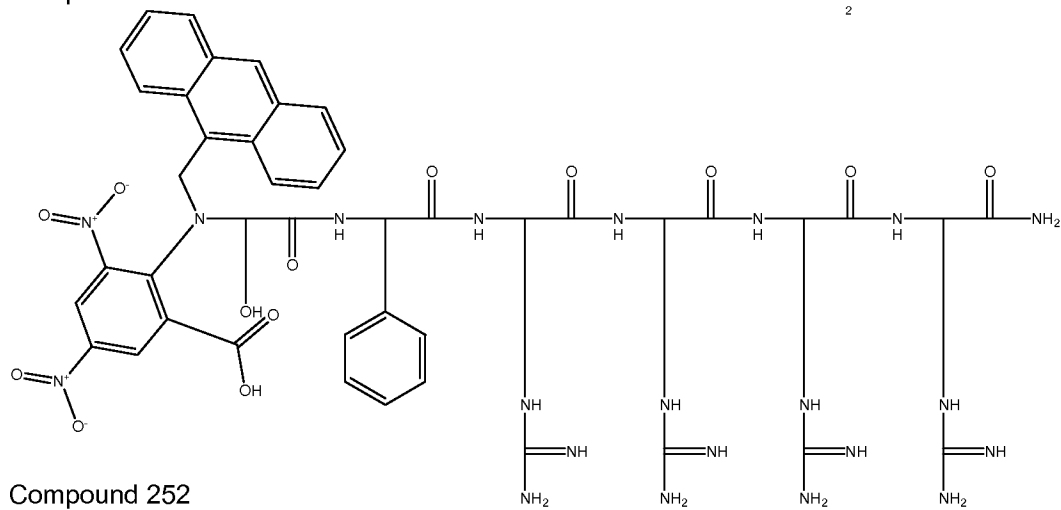
Compound 249



Compound 250

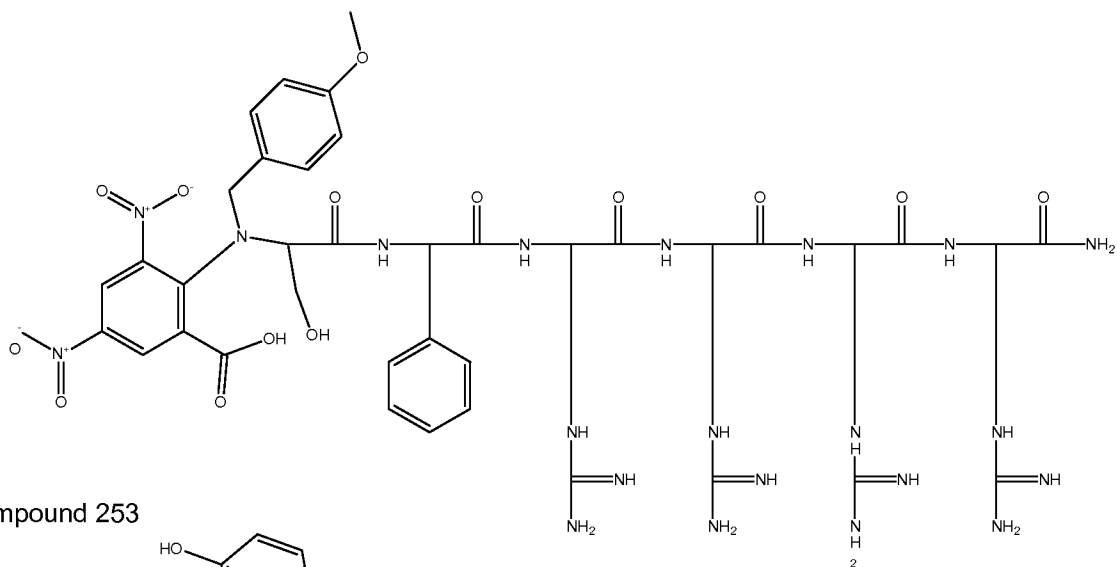


Compound 251

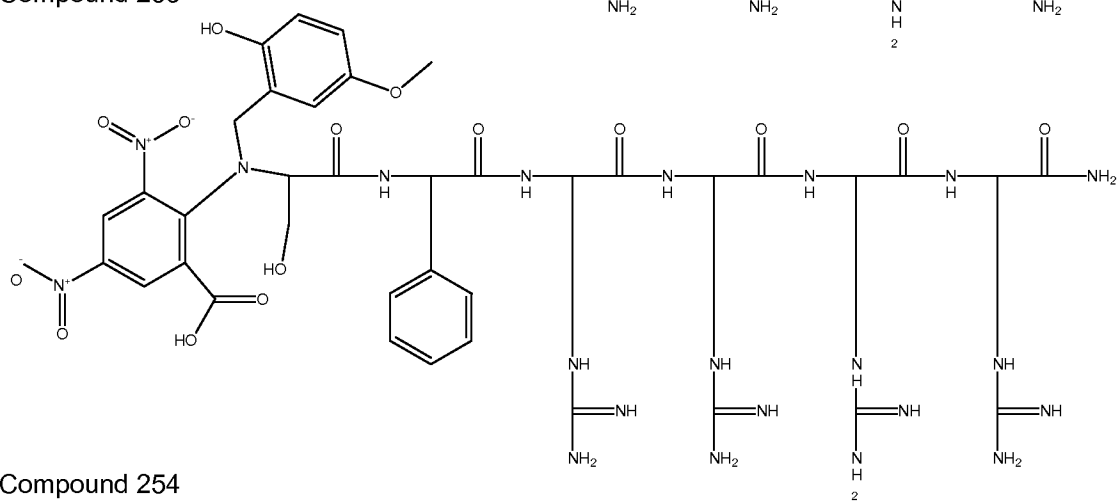


Compound 252

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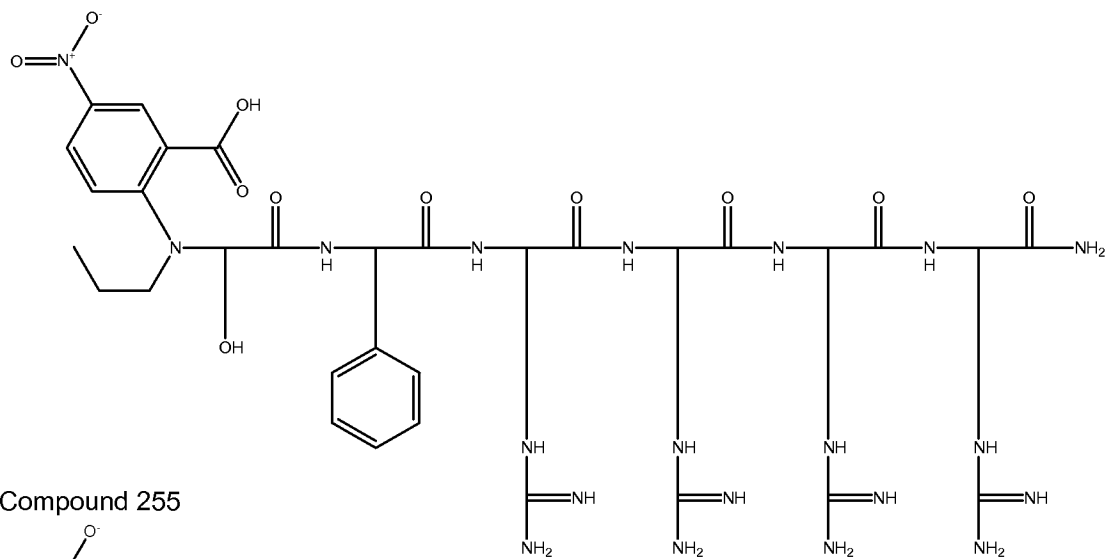


Compound 253

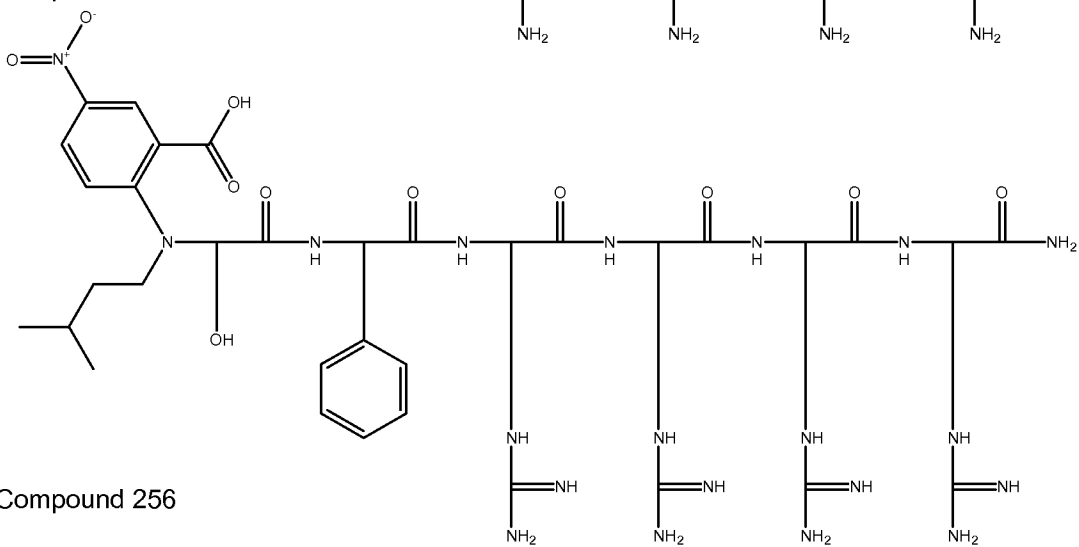


Compound 254

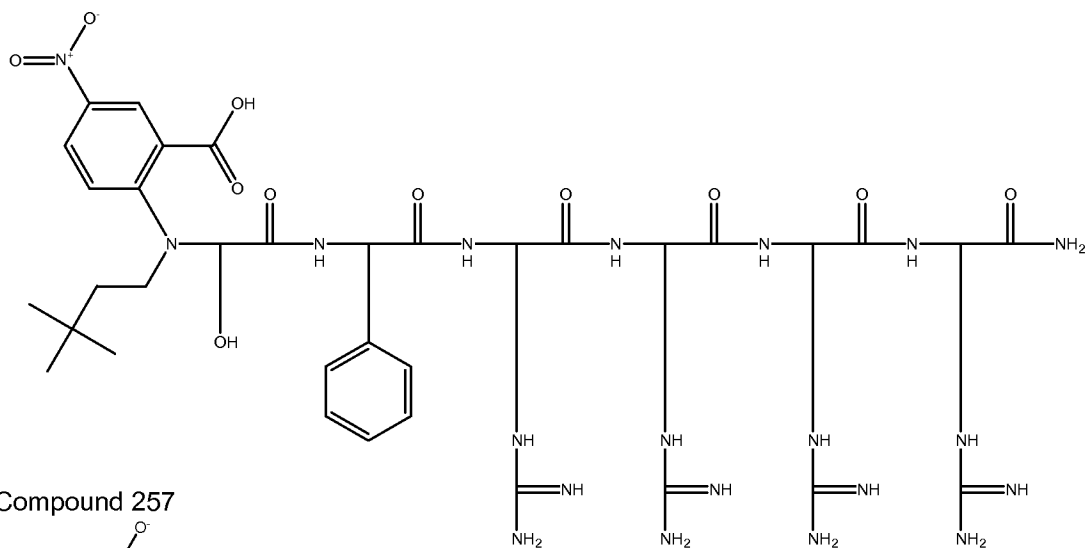
439227.1



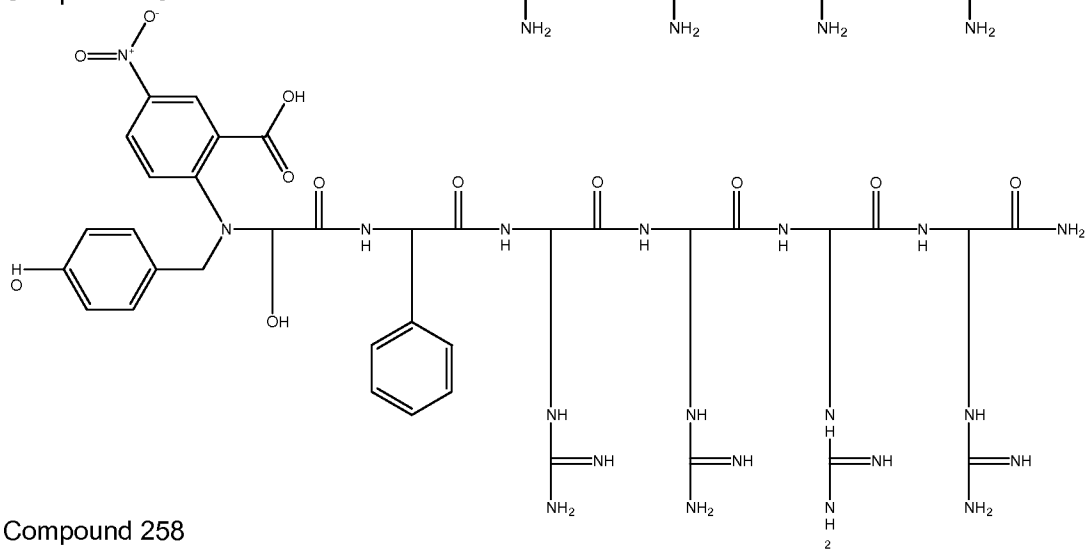
Compound 255



Compound 256

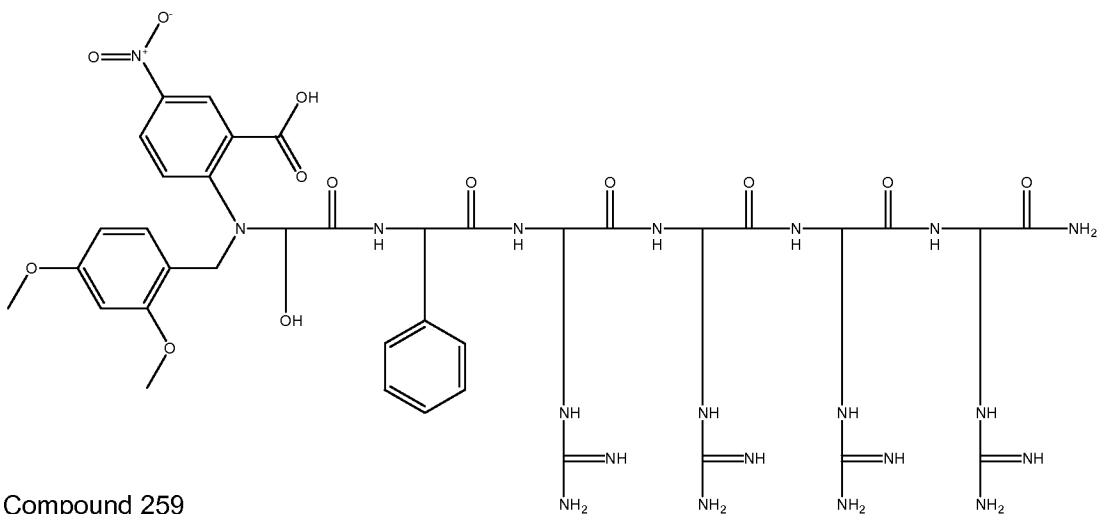


Compound 257

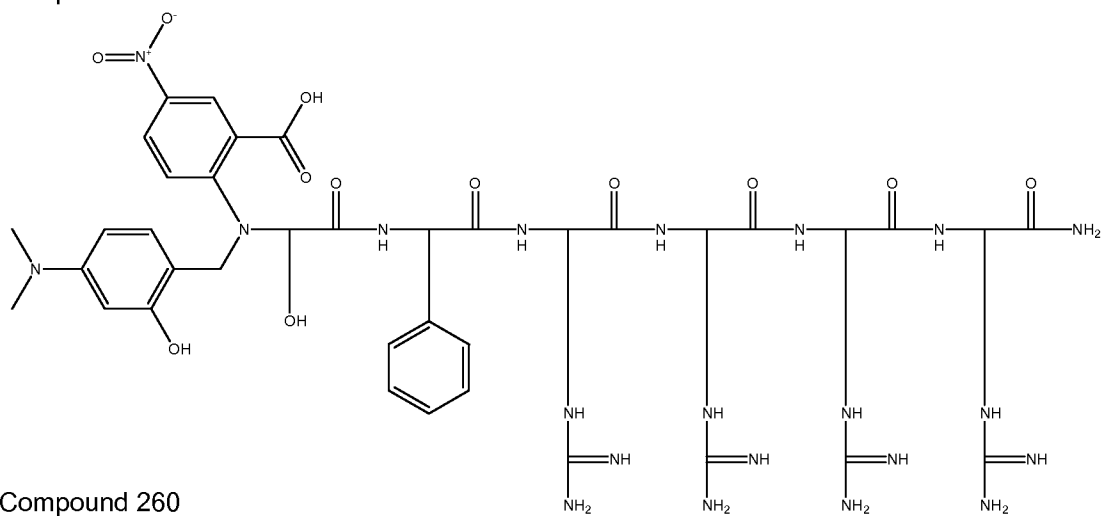


Compound 258

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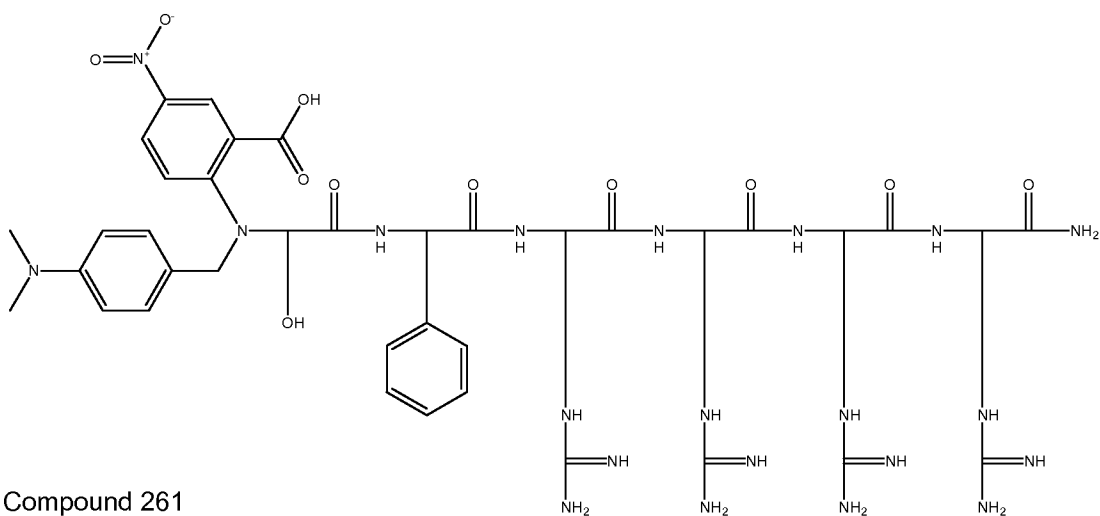


Compound 259

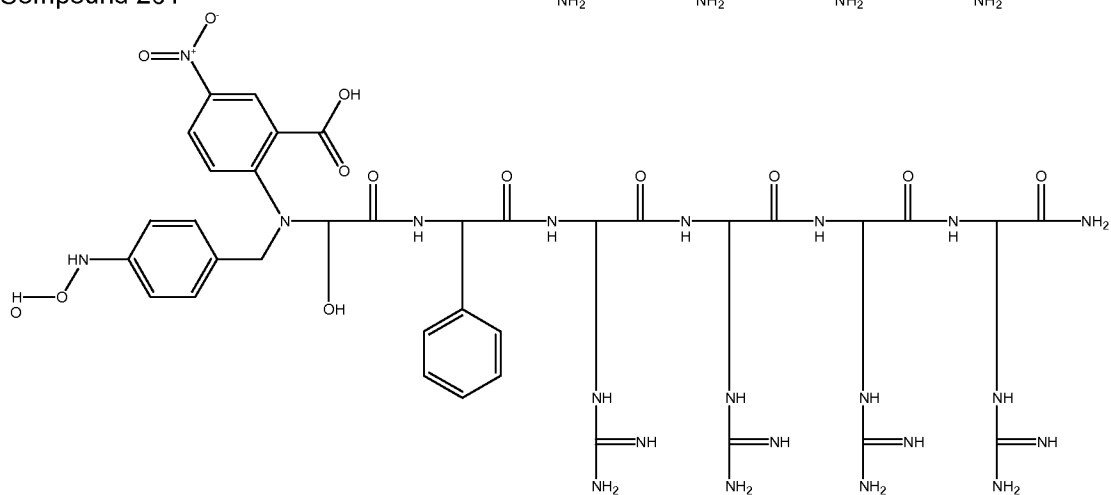


Compound 260

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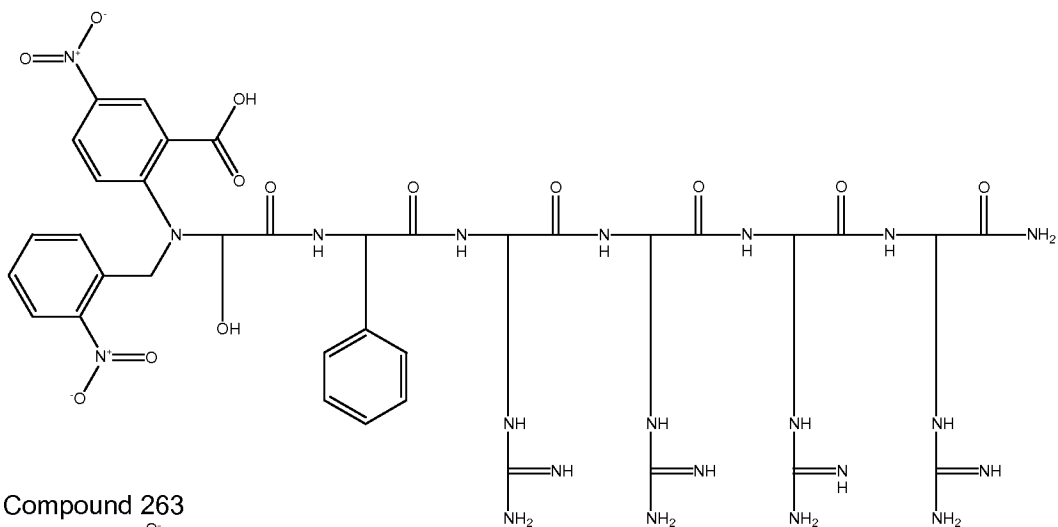


Compound 261

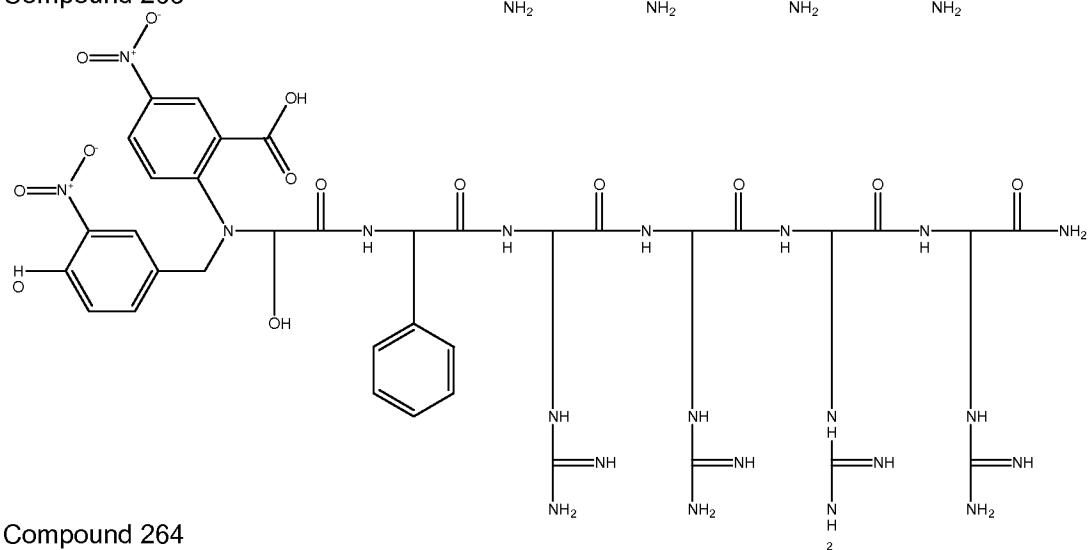


Compound 262

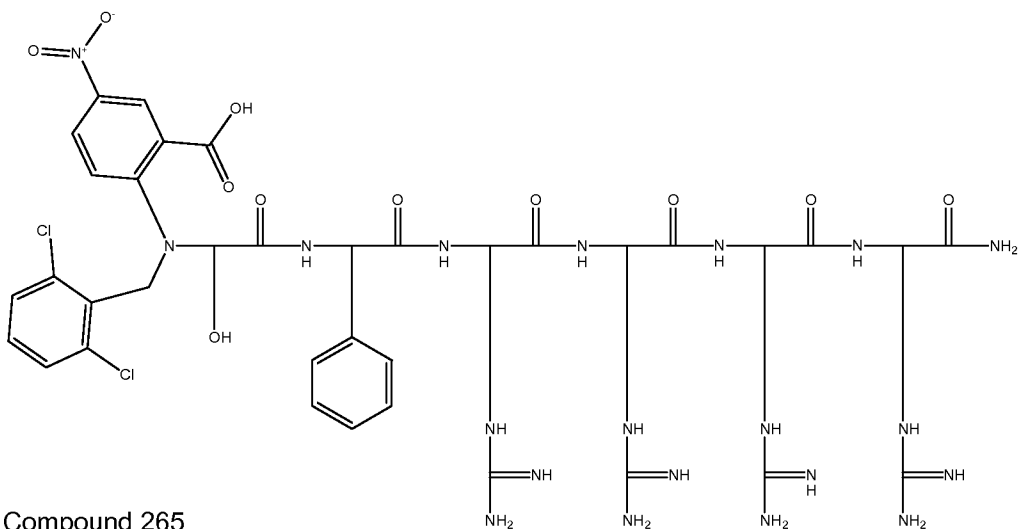
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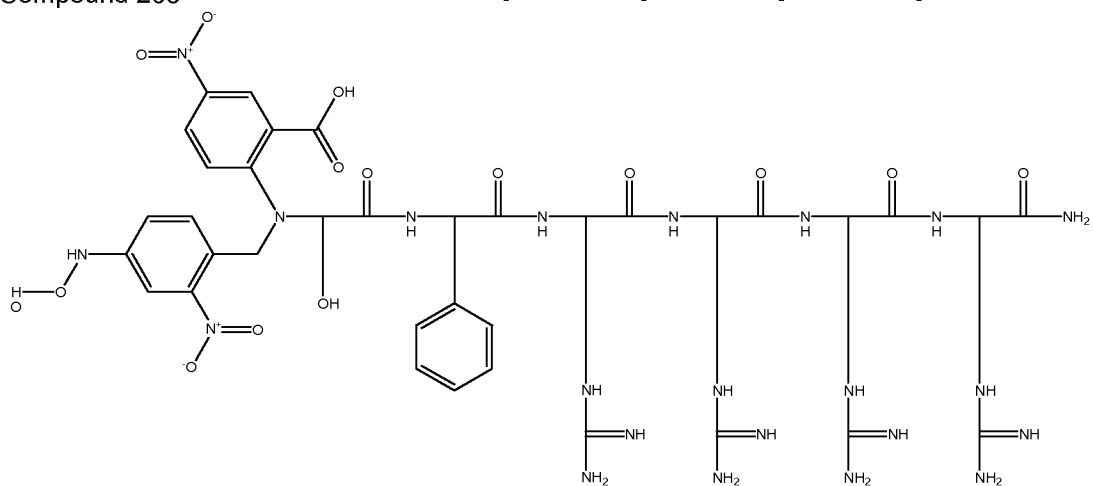
Compound 263



Compound 264

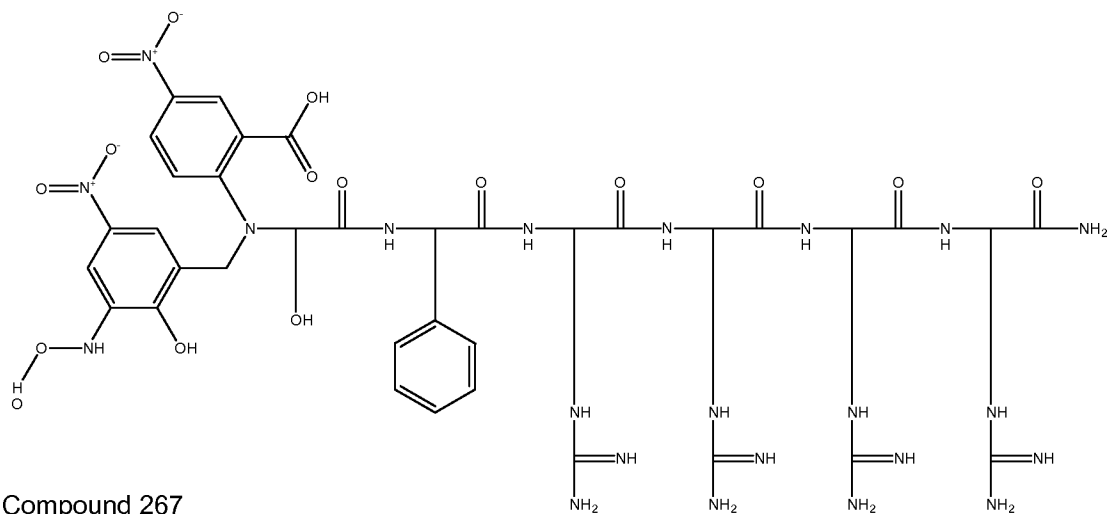


Compound 265

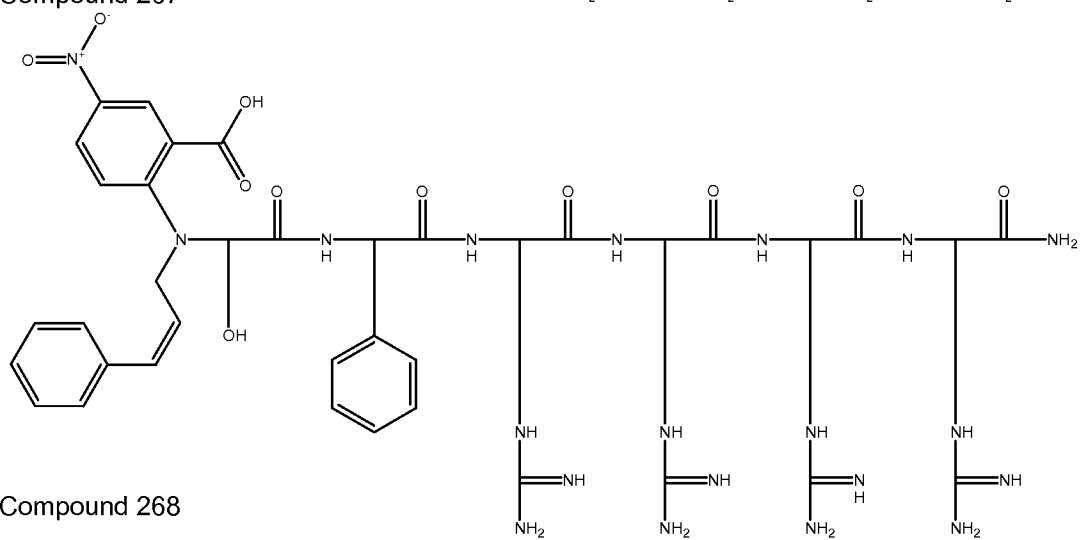


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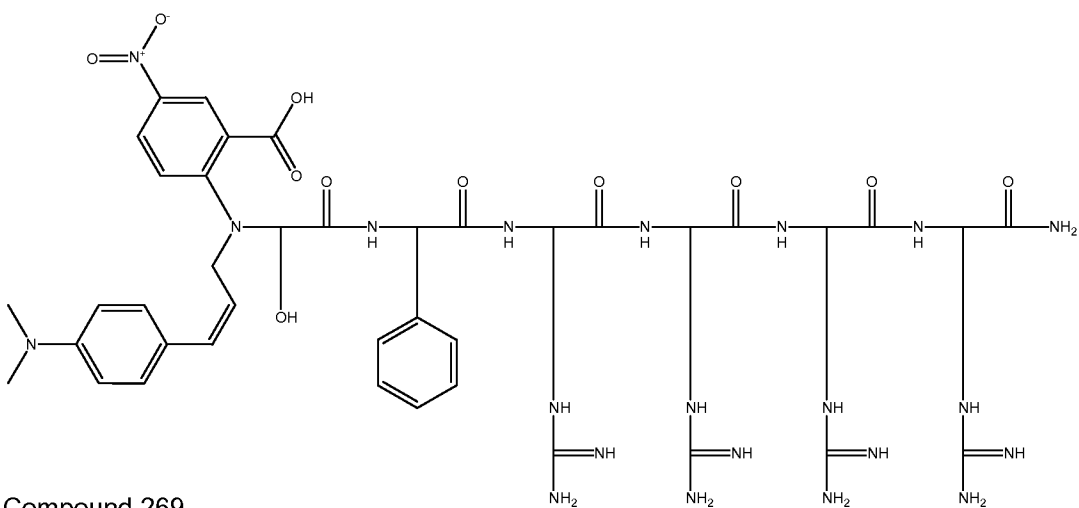


Compound 267

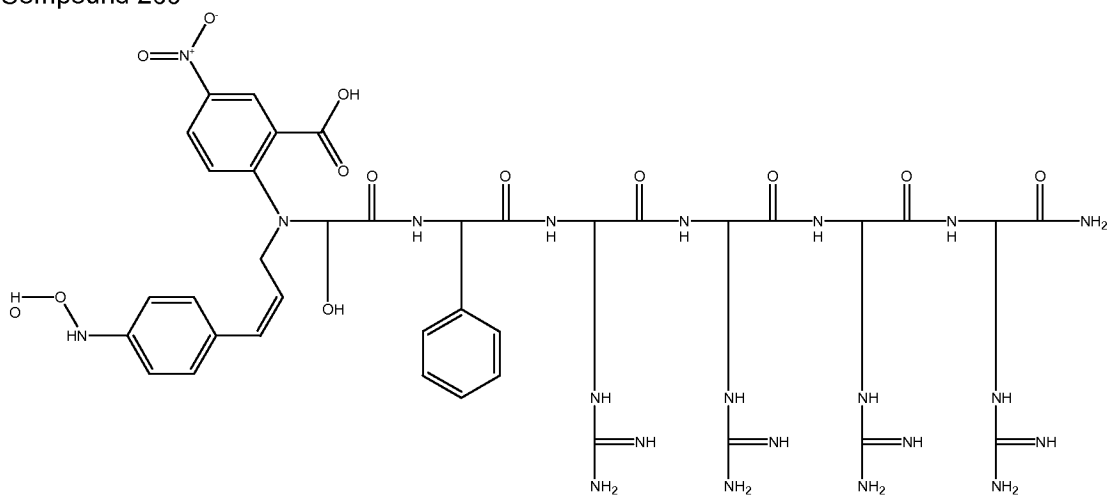


Compound 268

439227.1

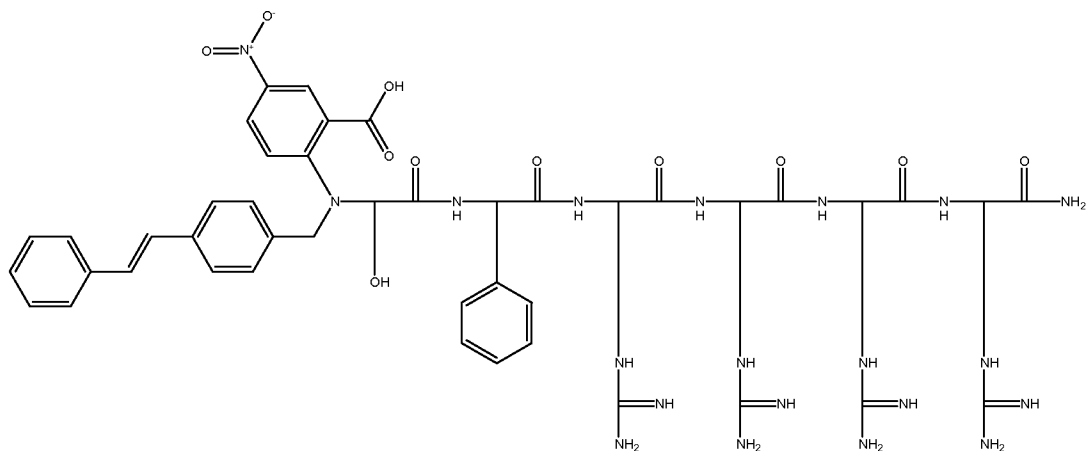


Compound 269

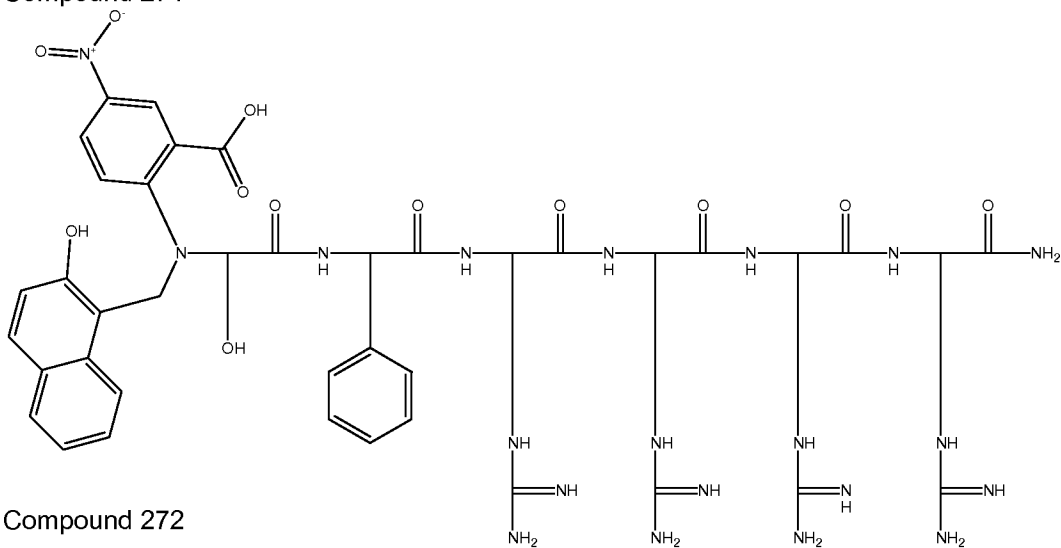


Compound 270

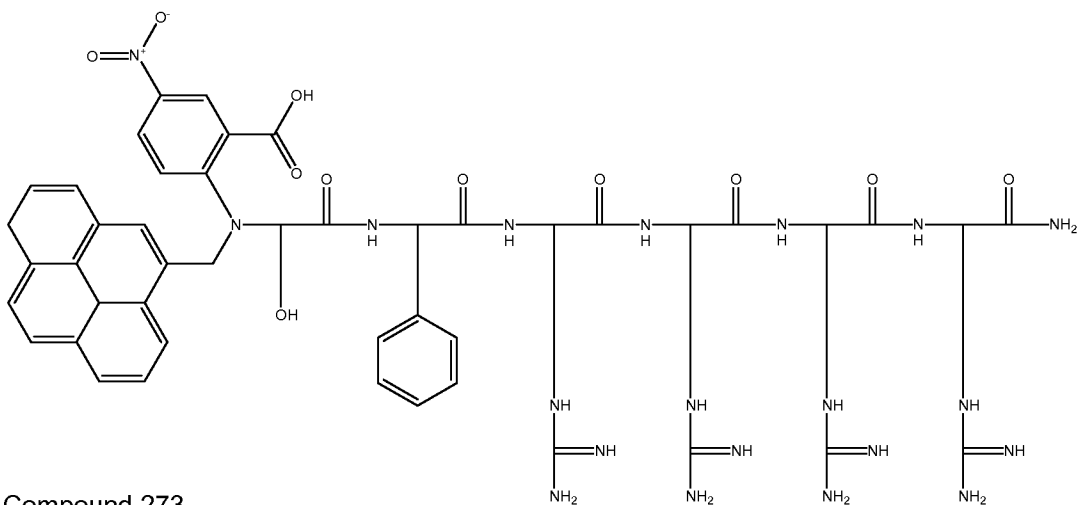
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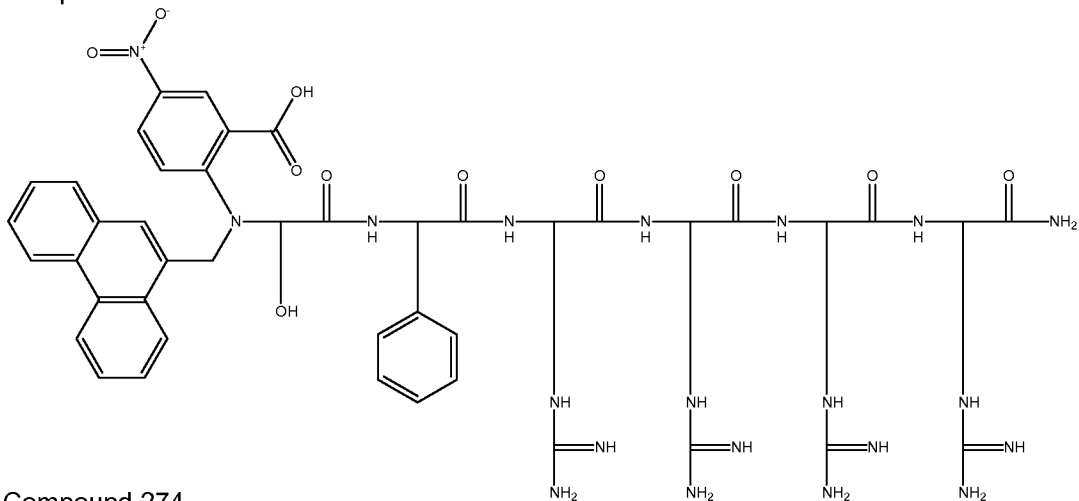
Compound 271



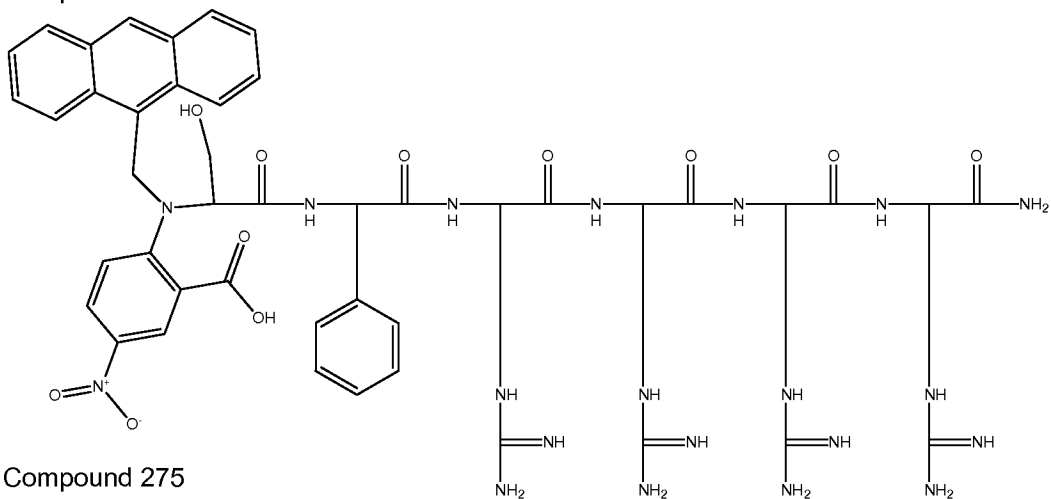
Compound 272



Compound 273

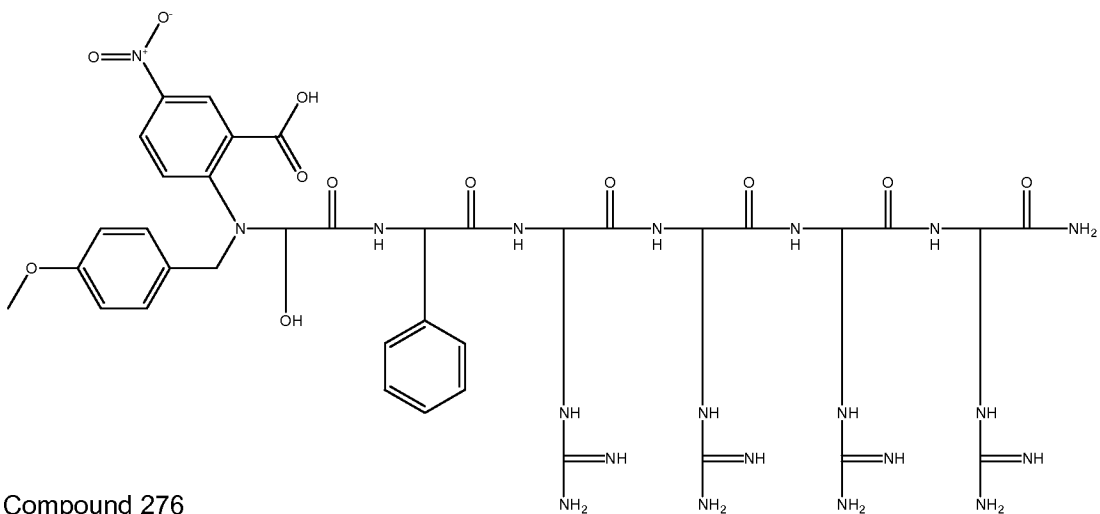


Compound 274

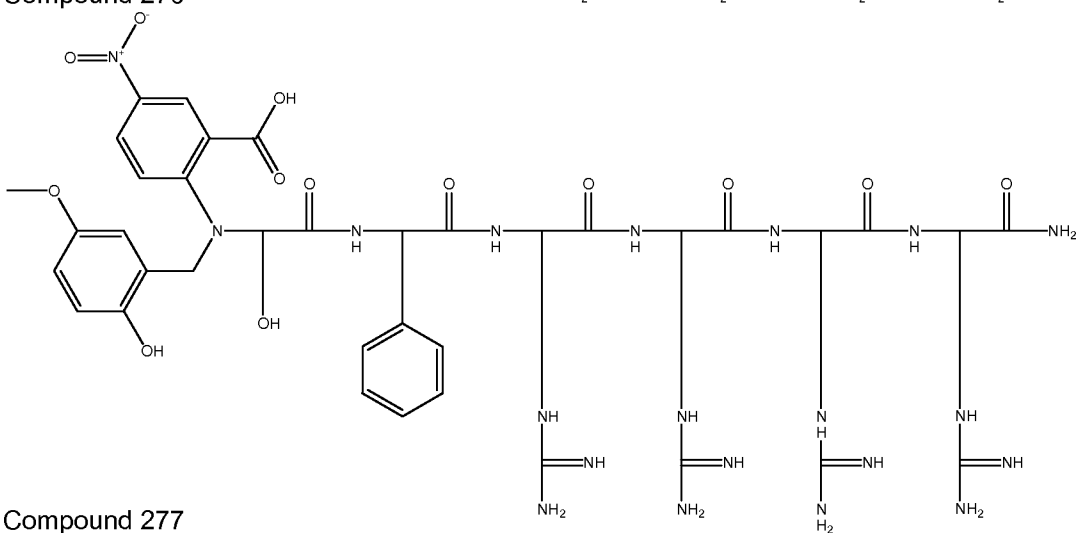


Compound 275

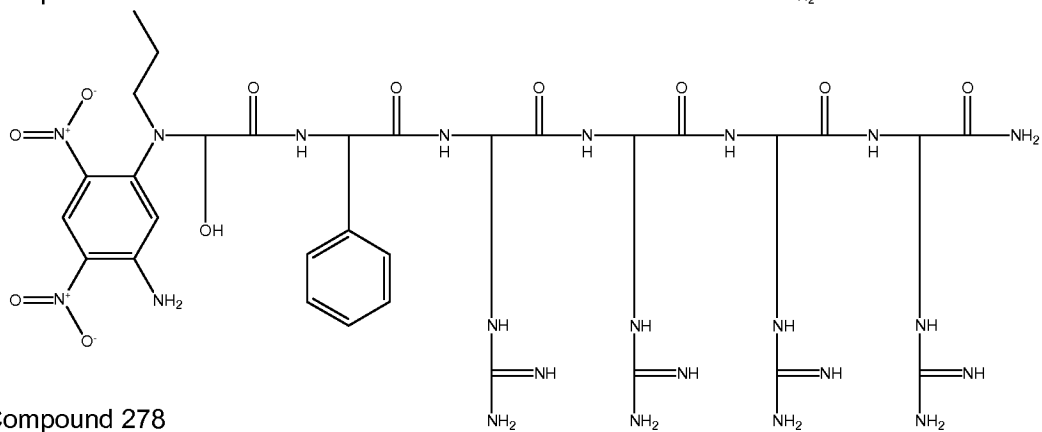
439227.1



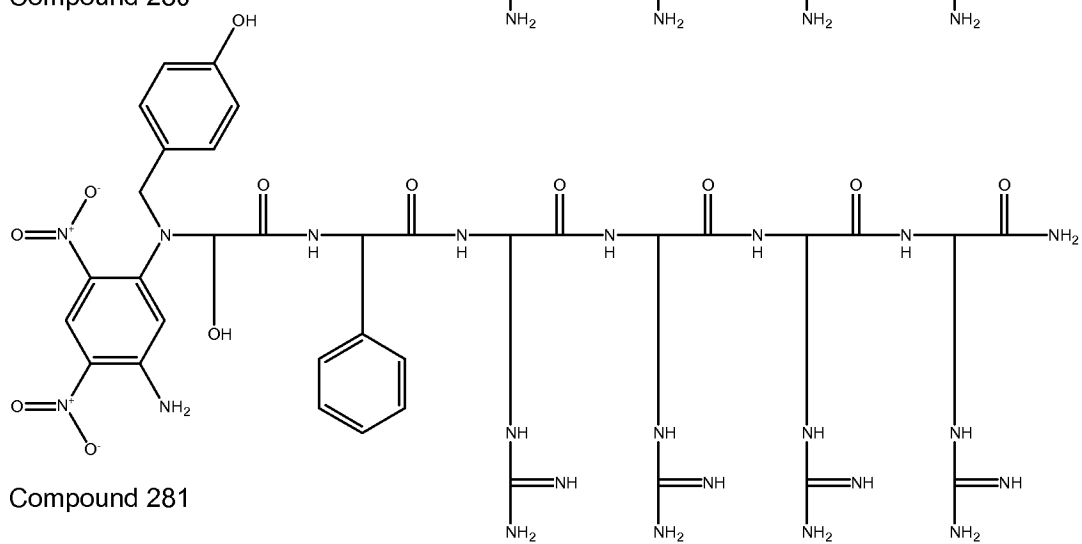
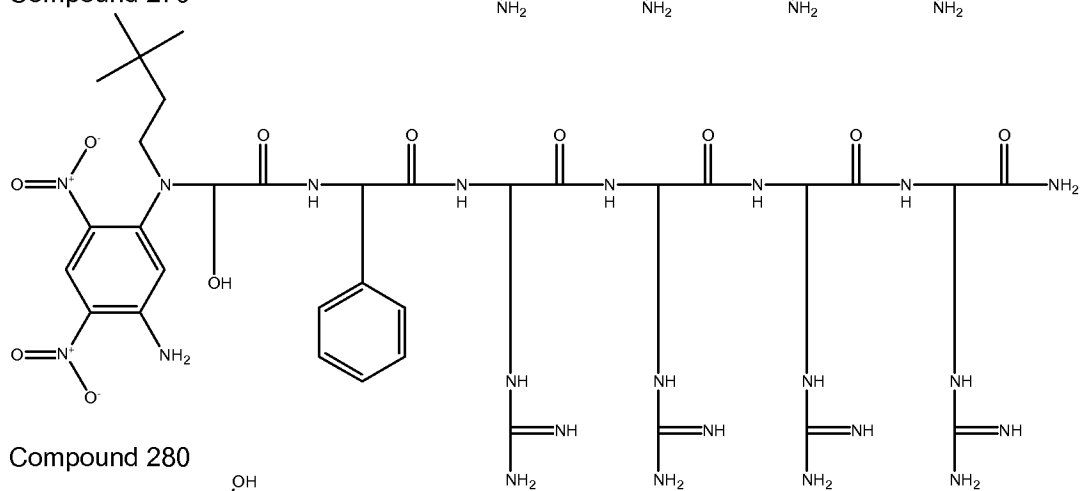
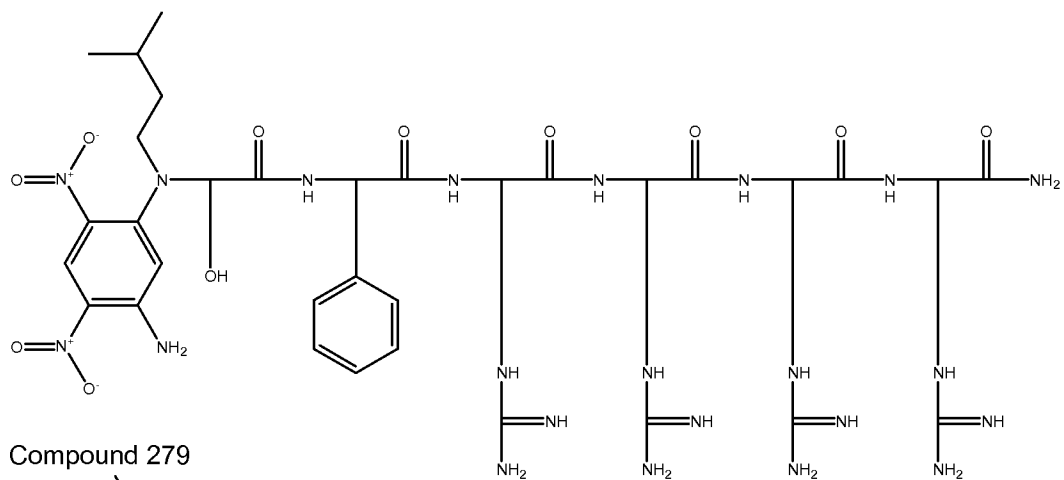
Compound 276

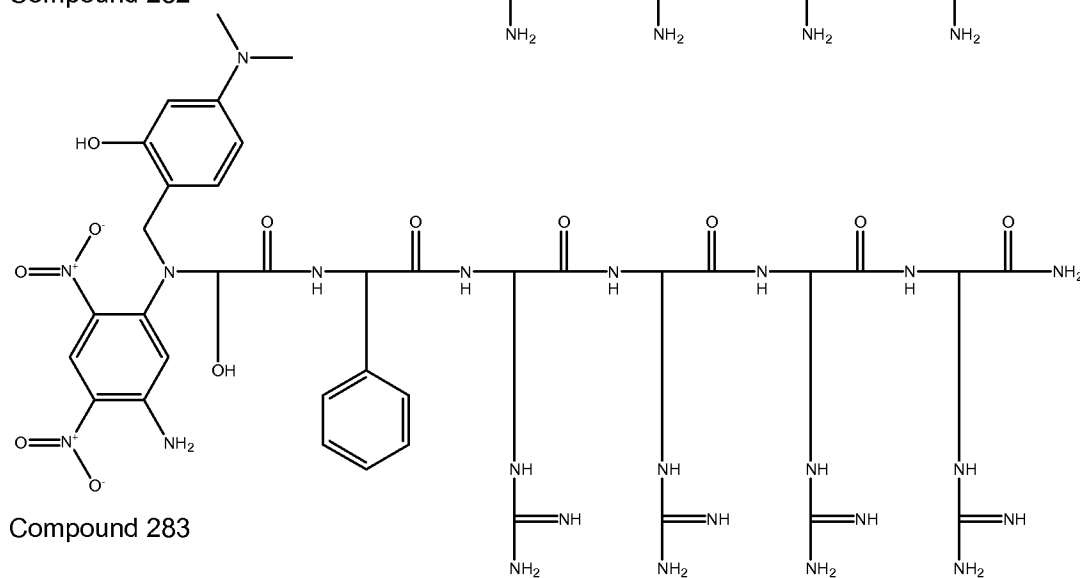
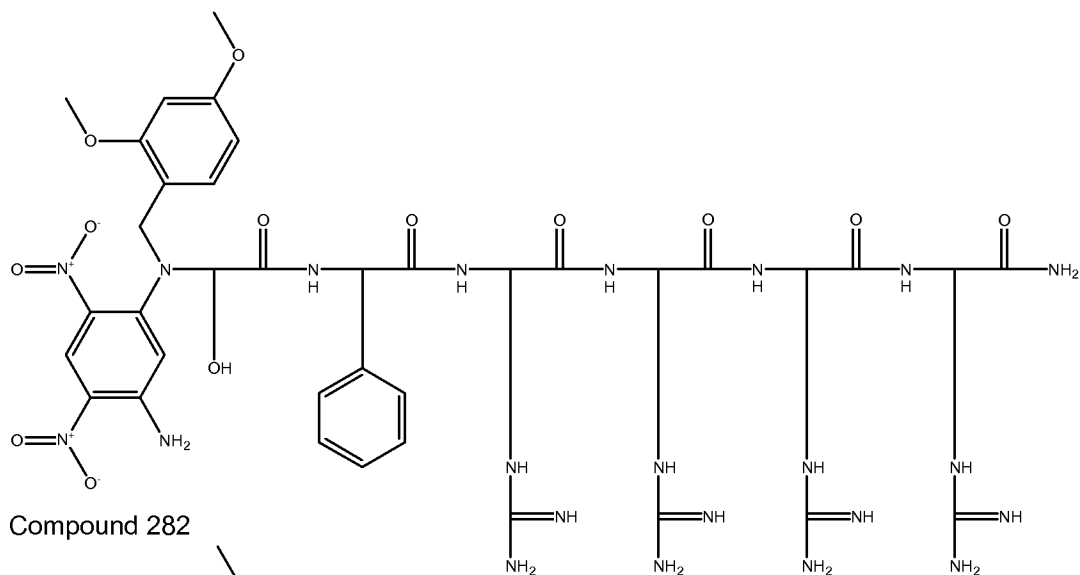


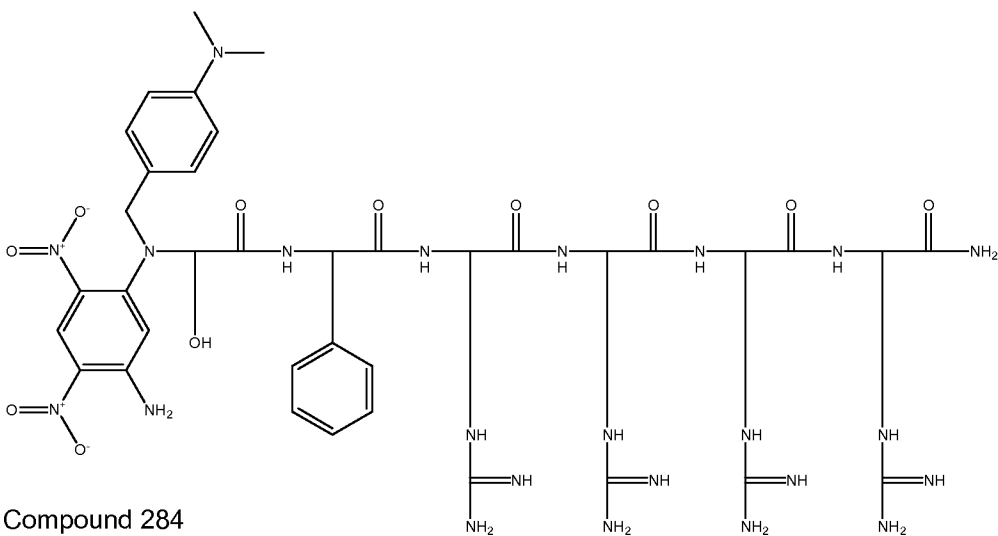
Compound 277



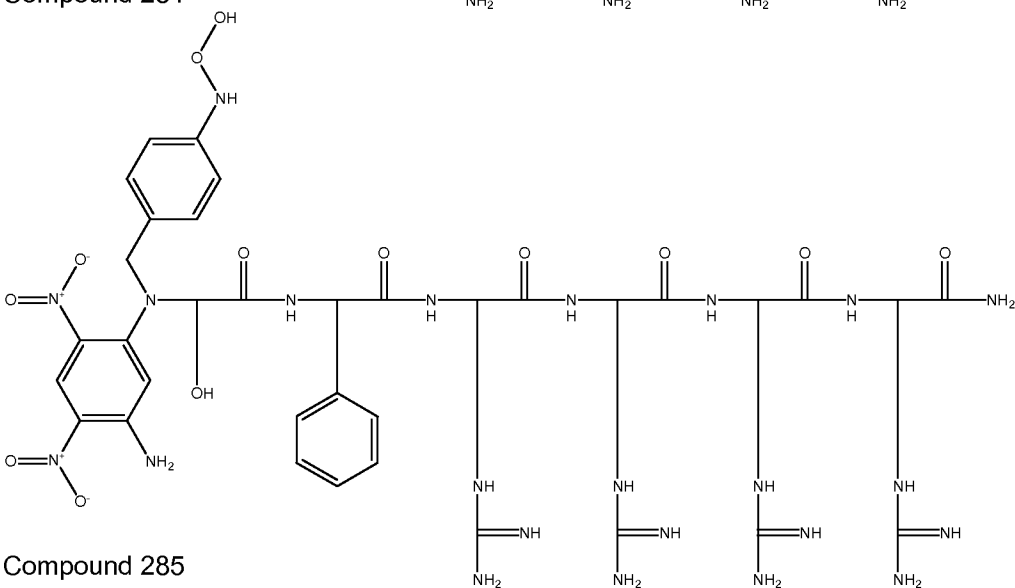
Compound 278



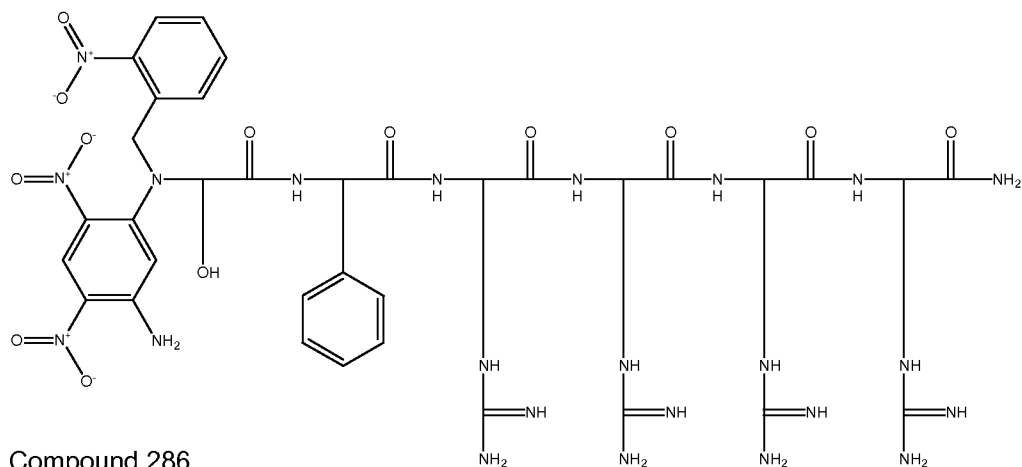




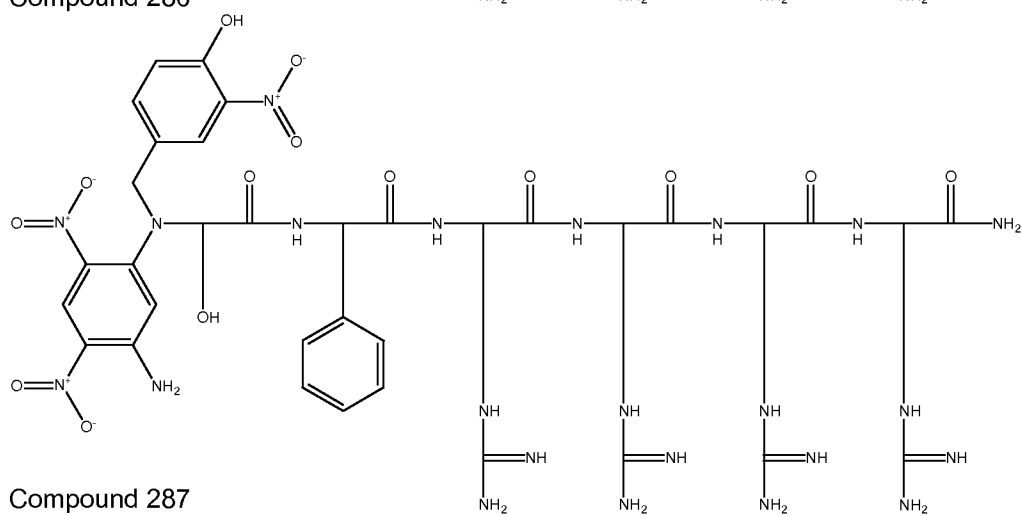
Compound 284



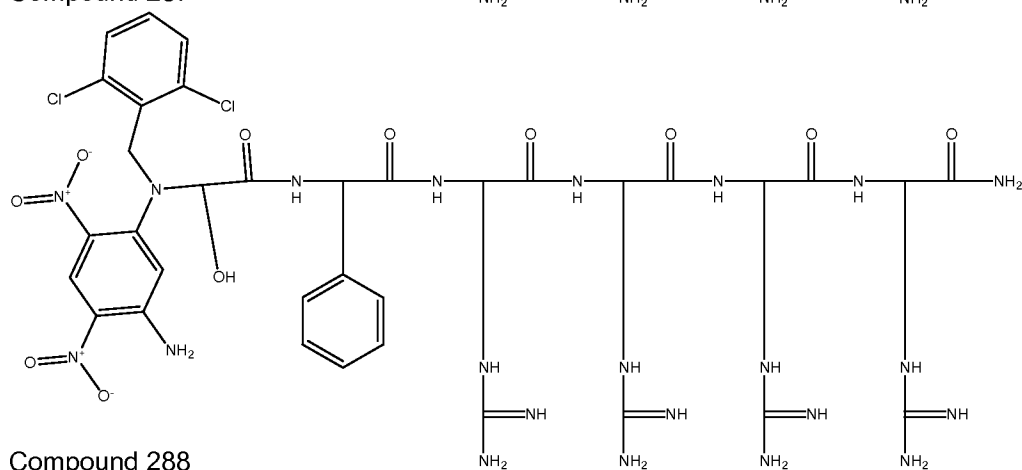
Compound 285



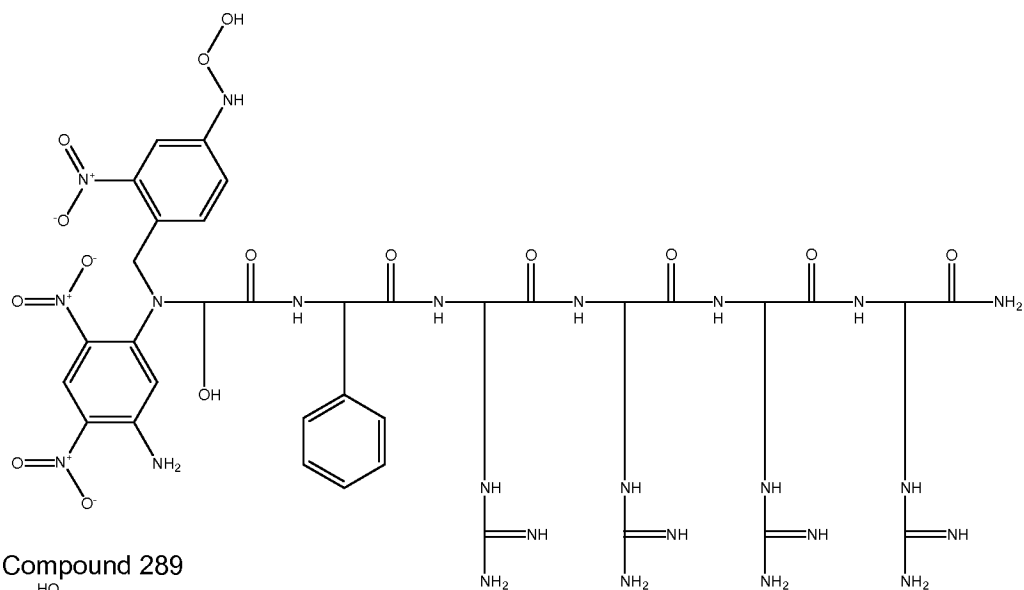
Compound 286



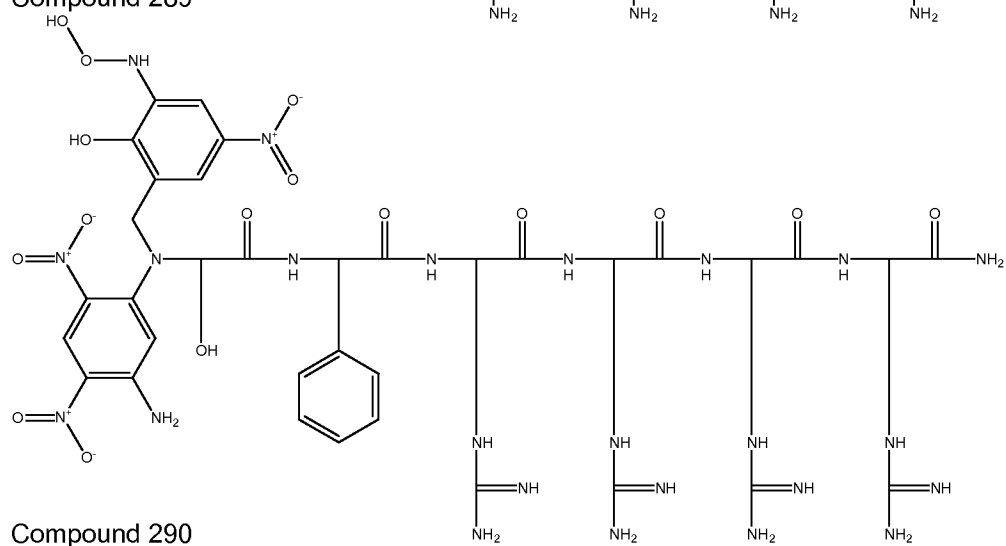
Compound 287



Compound 288

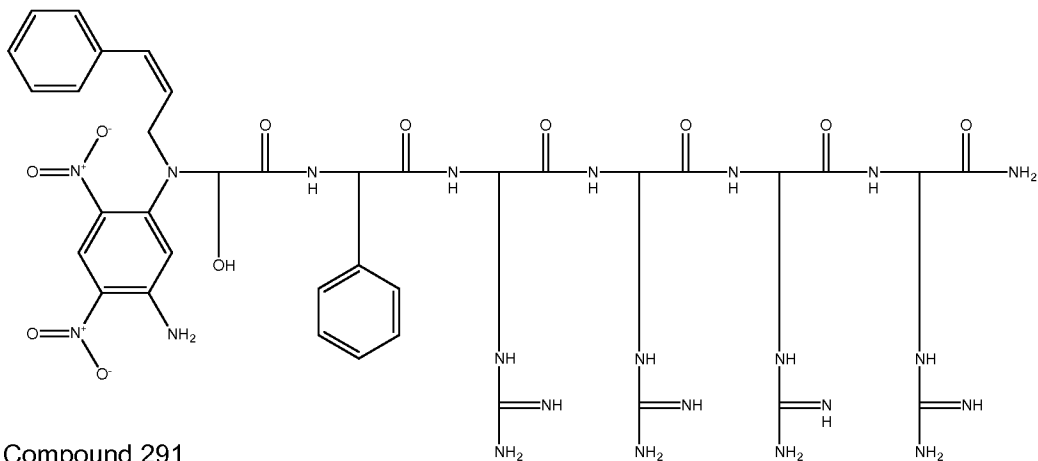


Compound 289

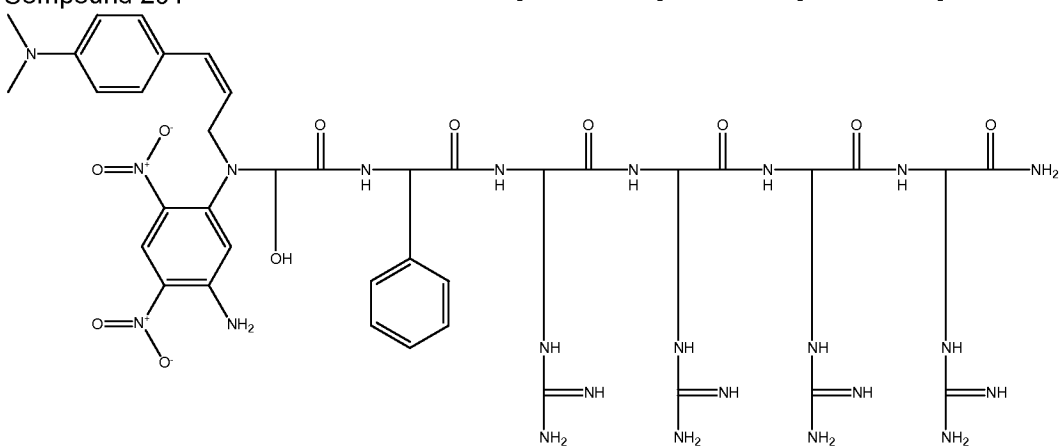


Compound 290

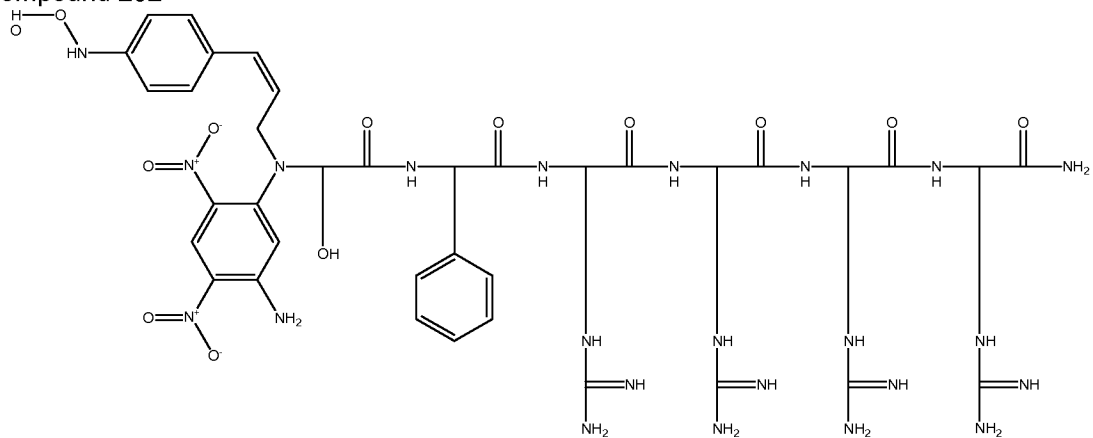
439227.1



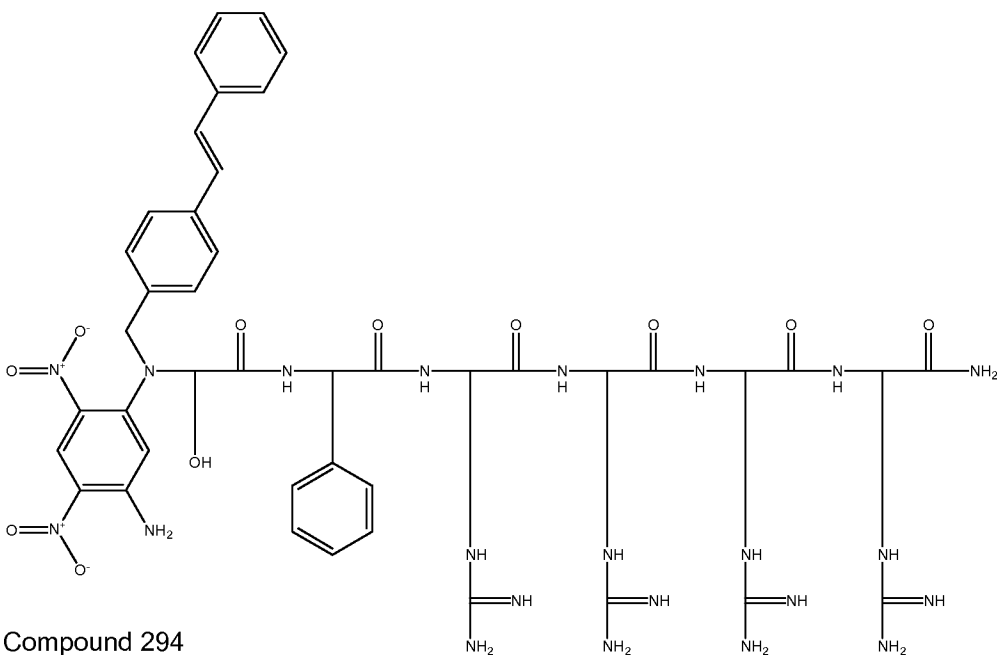
Compound 291



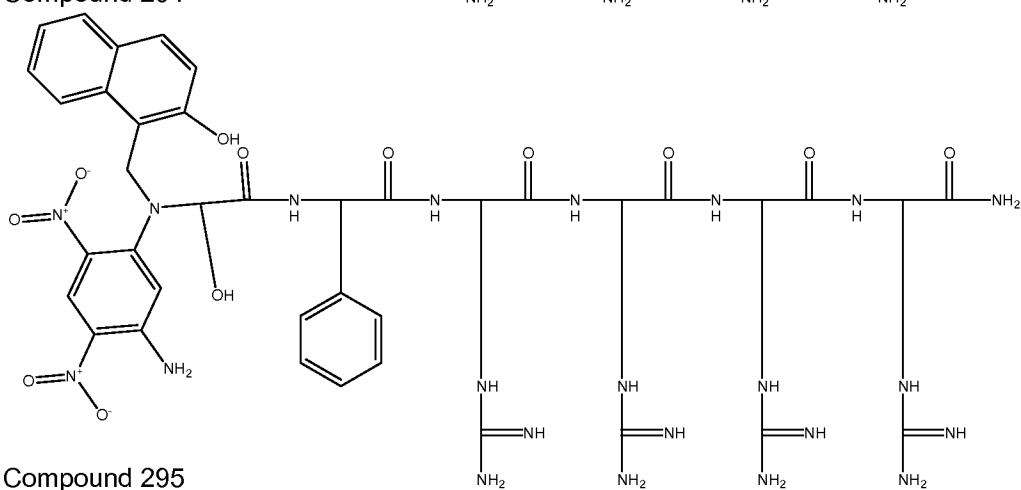
Compound 292



Compound 293

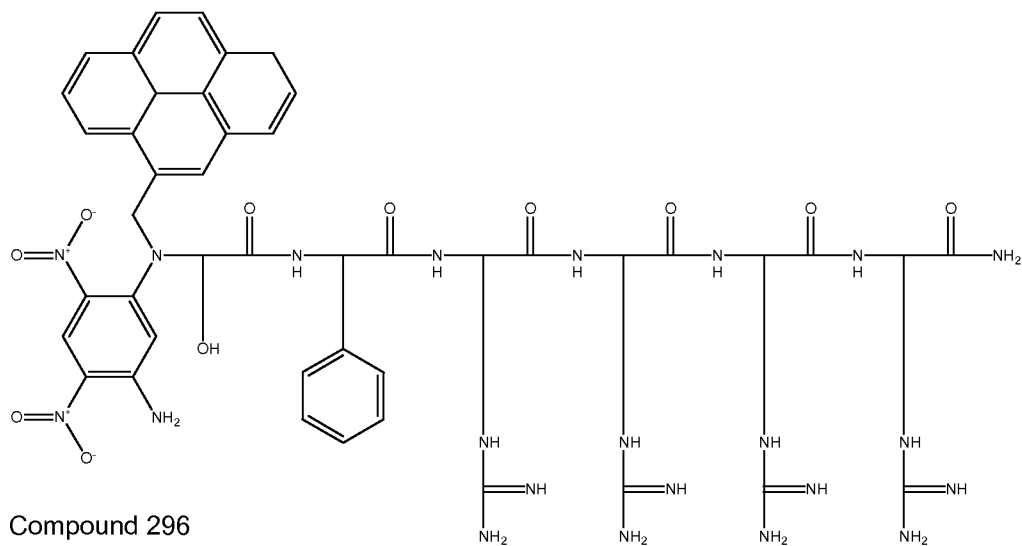


Compound 294

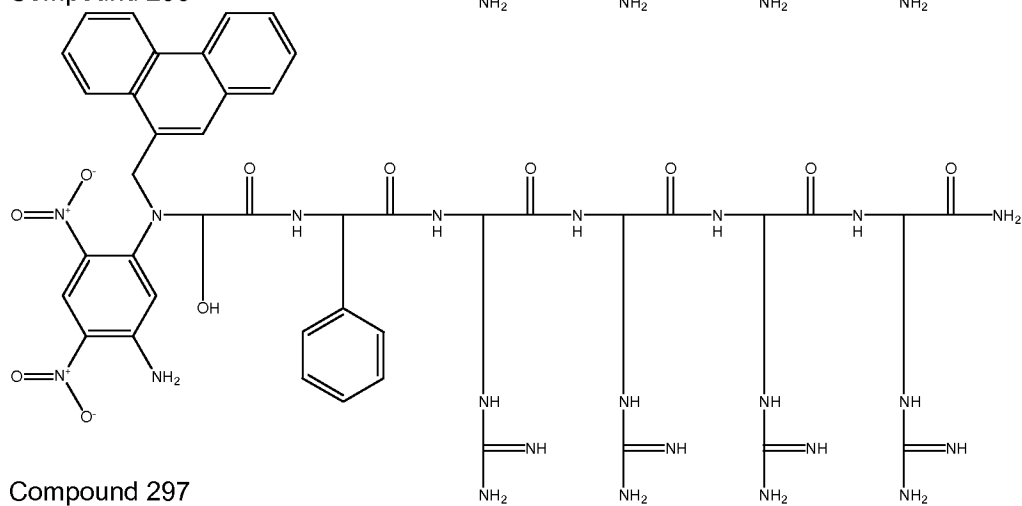


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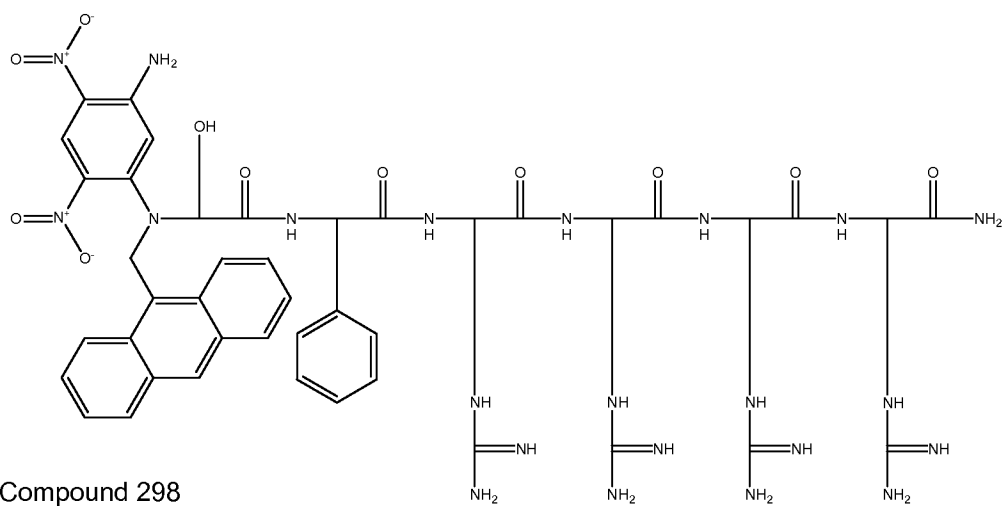


Compound 296

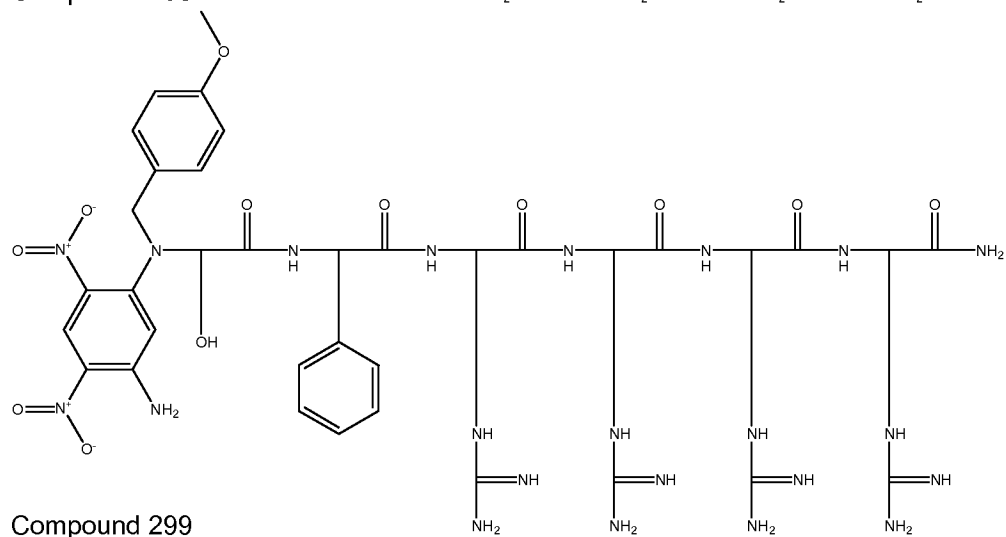


Compound 297

439227.1

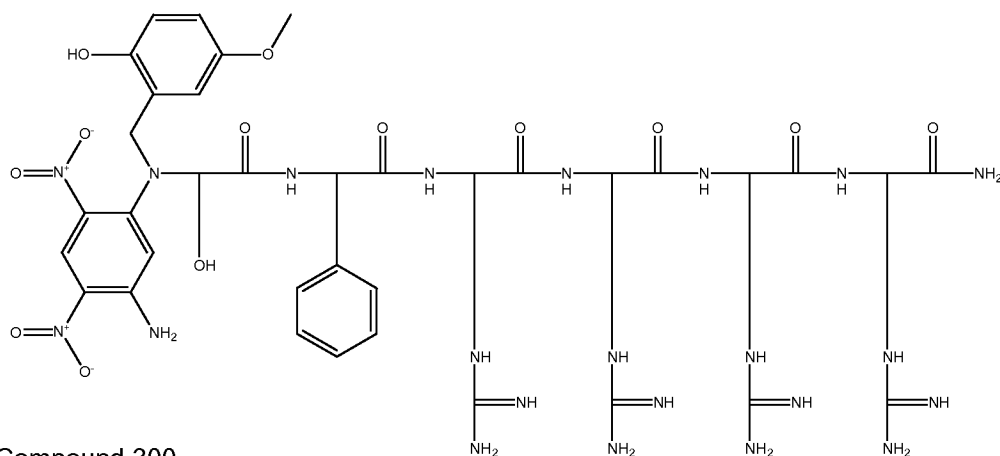


Compound 298

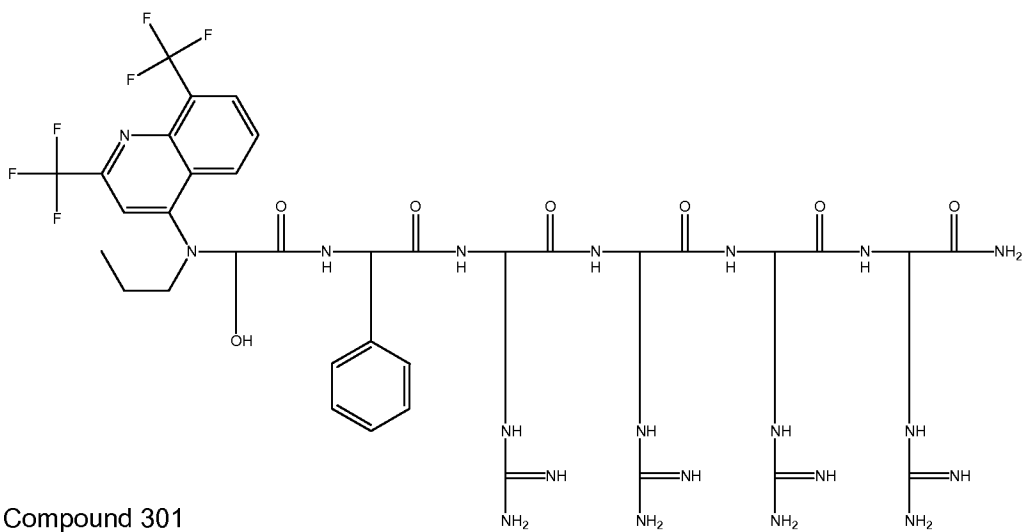


Compound 299

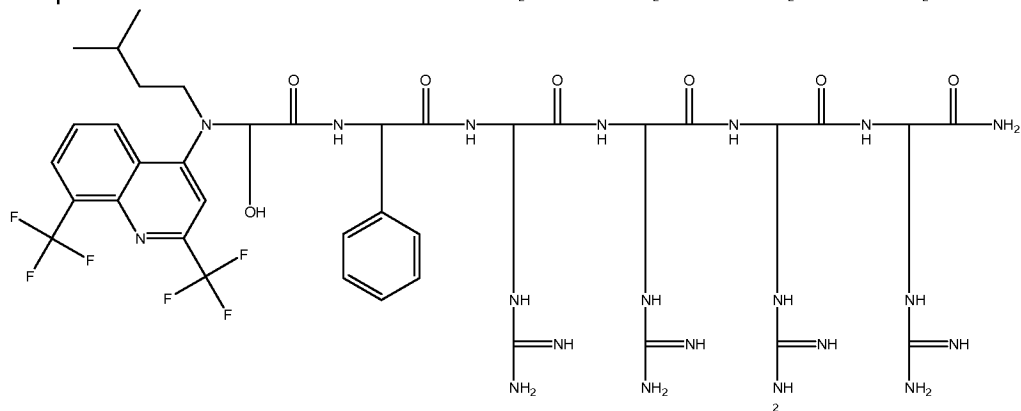
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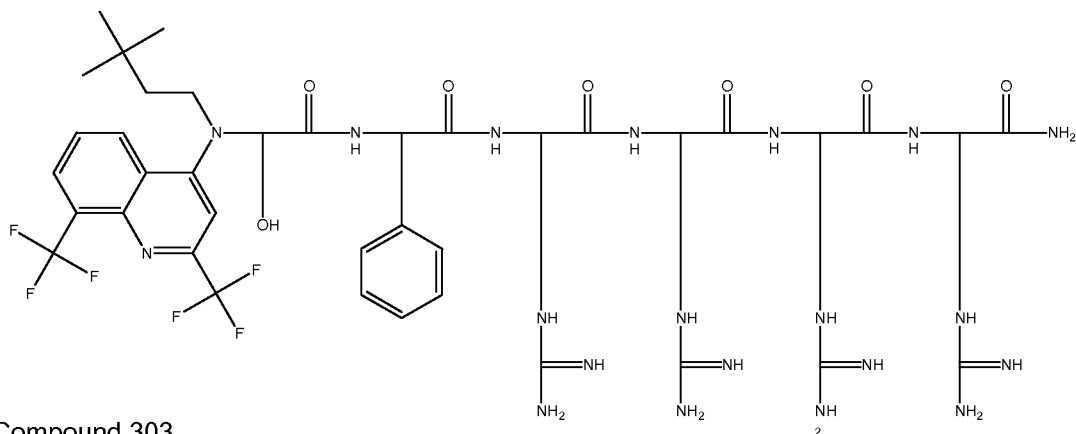
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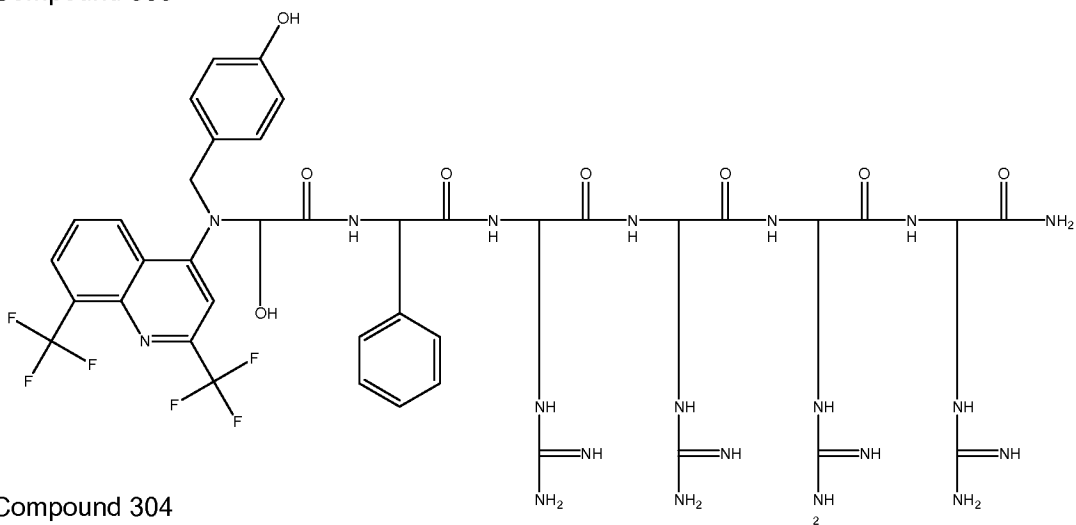
Compound 301



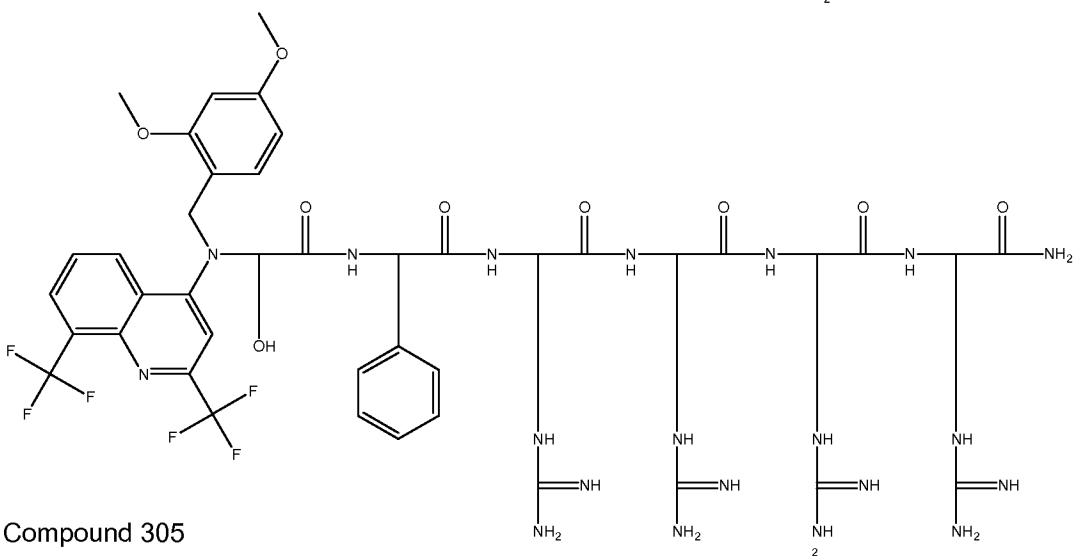
Compound 302



Compound 303

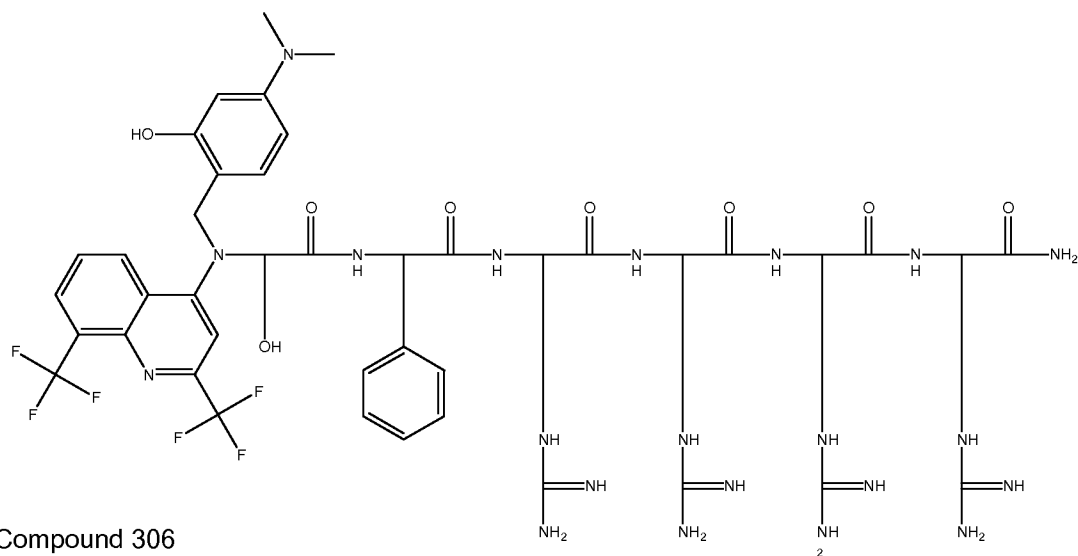


Compound 304

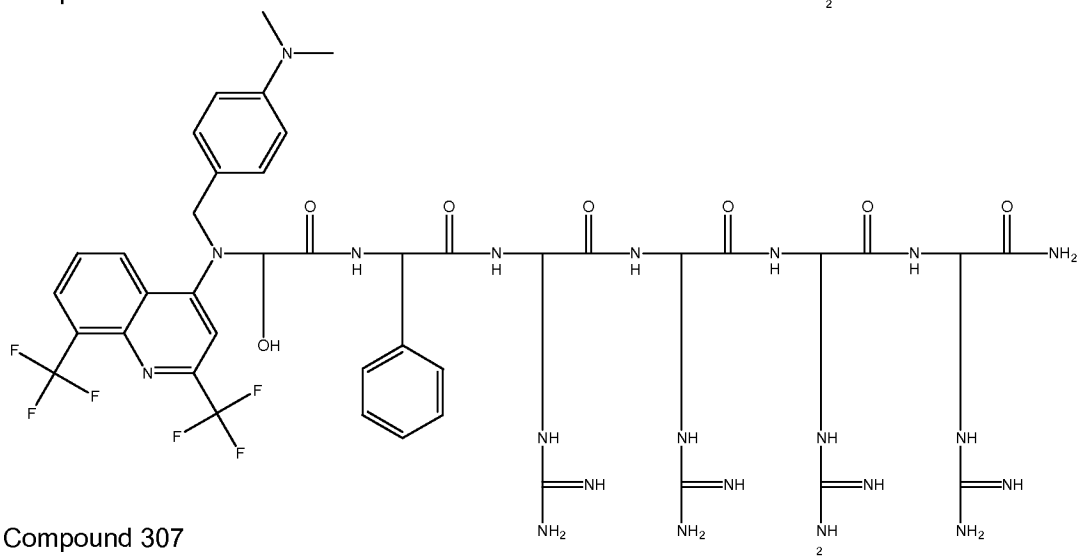


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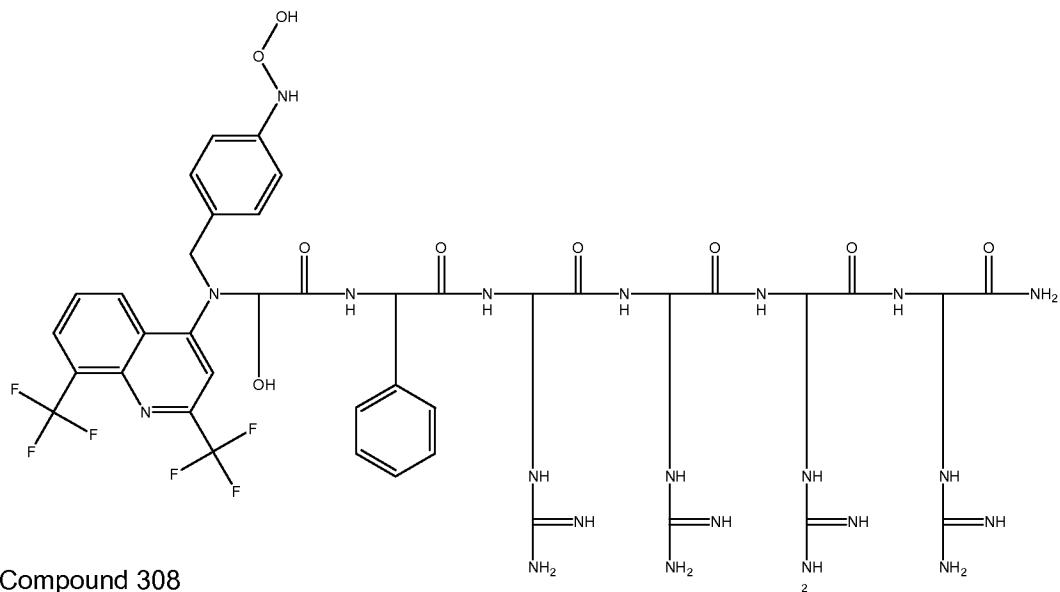


Compound 306

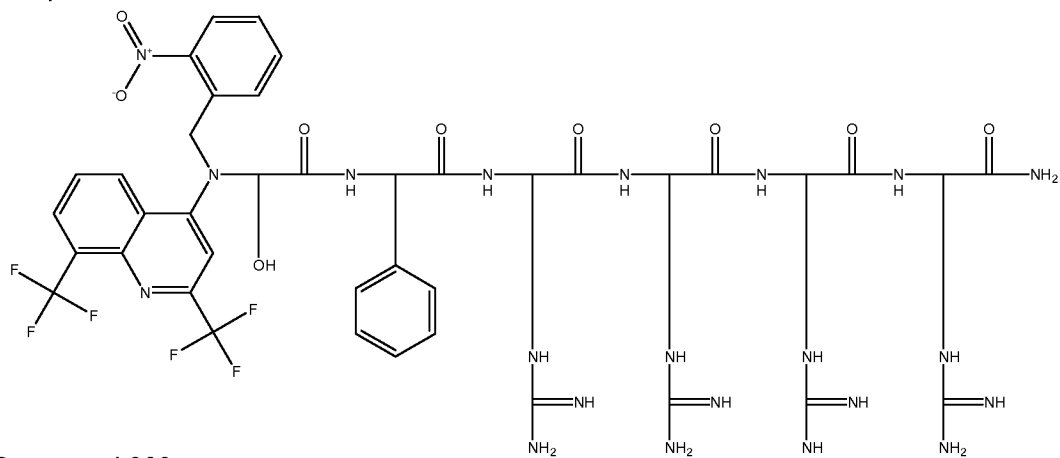


Compound 307

439227.1

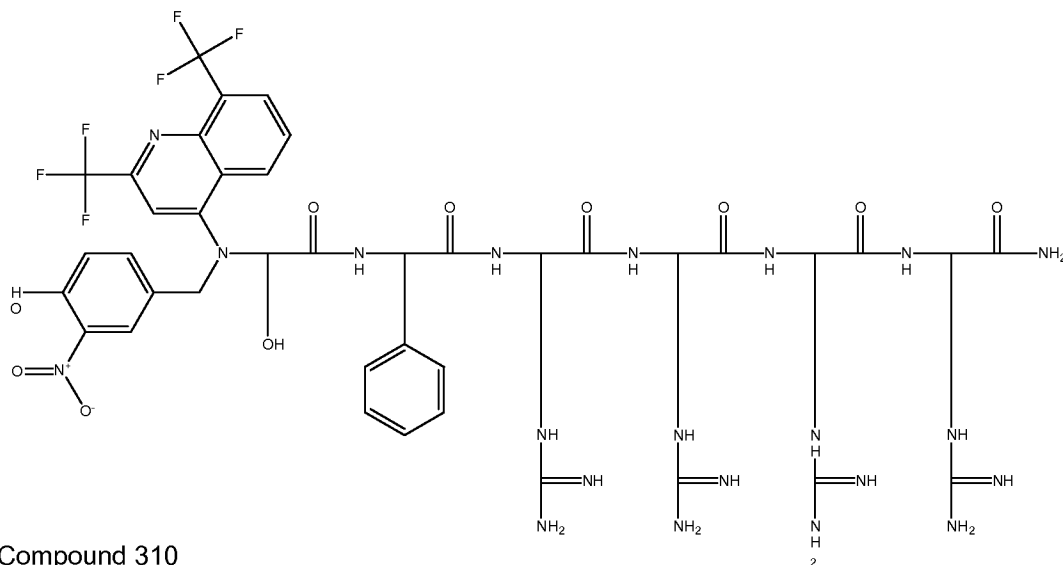


Compound 308

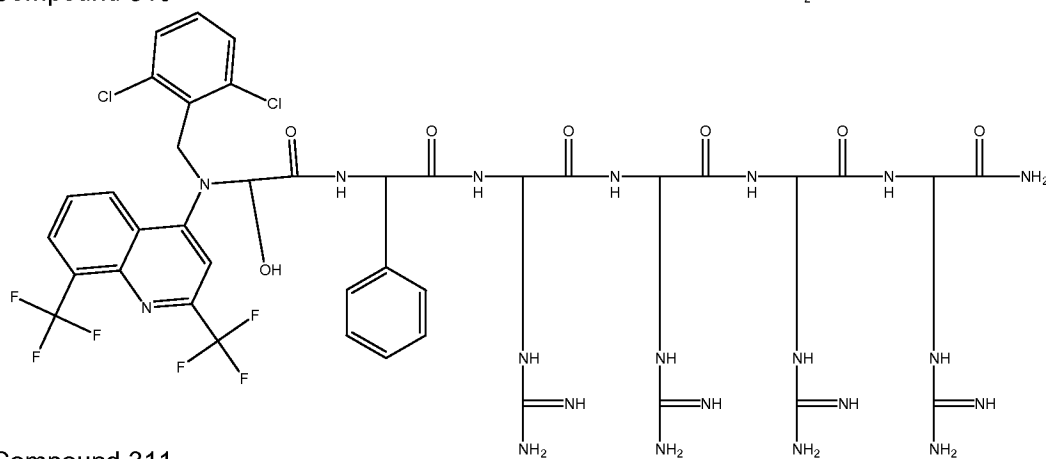


Compound 309

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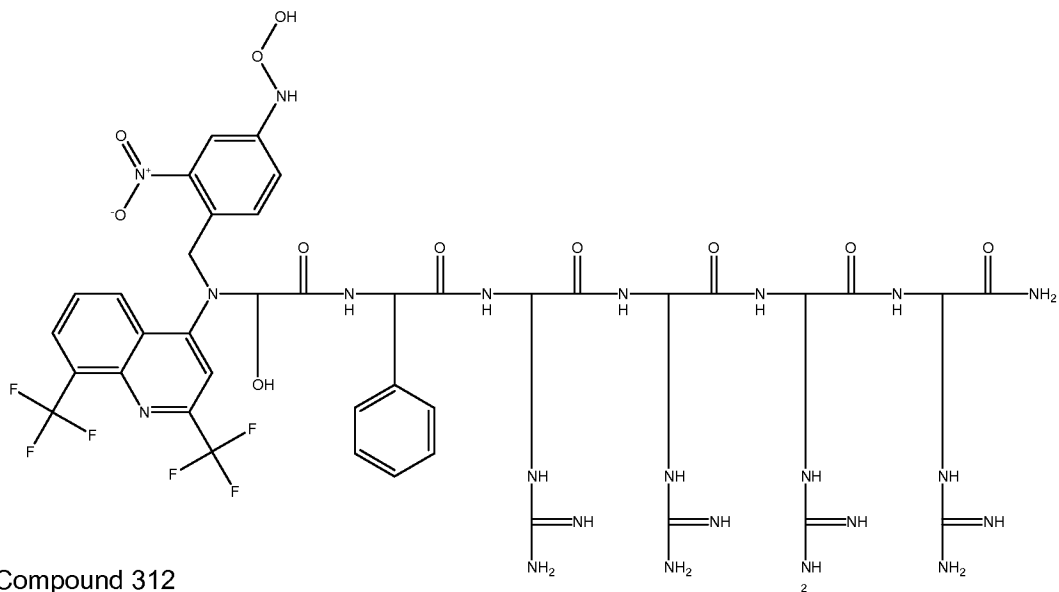


Compound 310

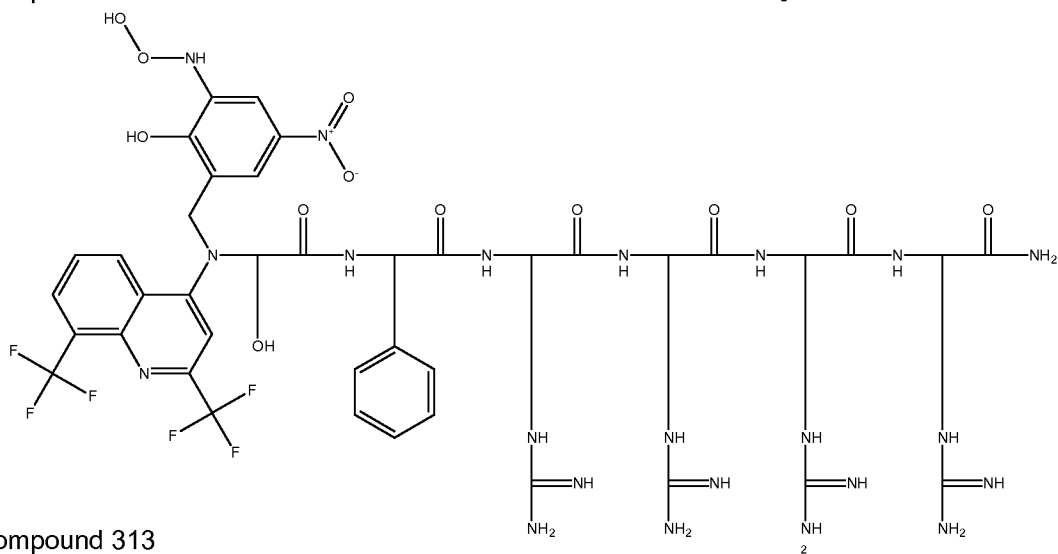


Compound 311

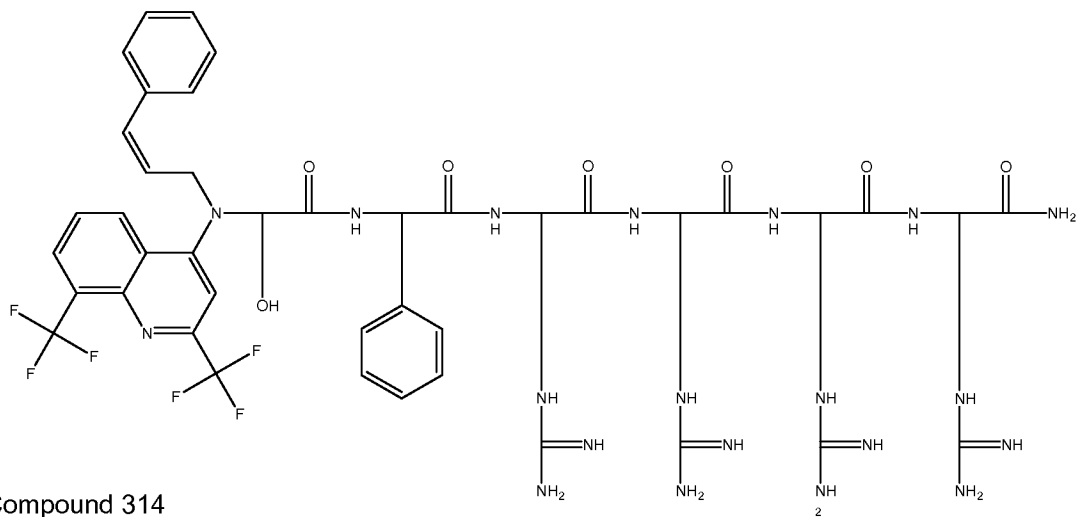
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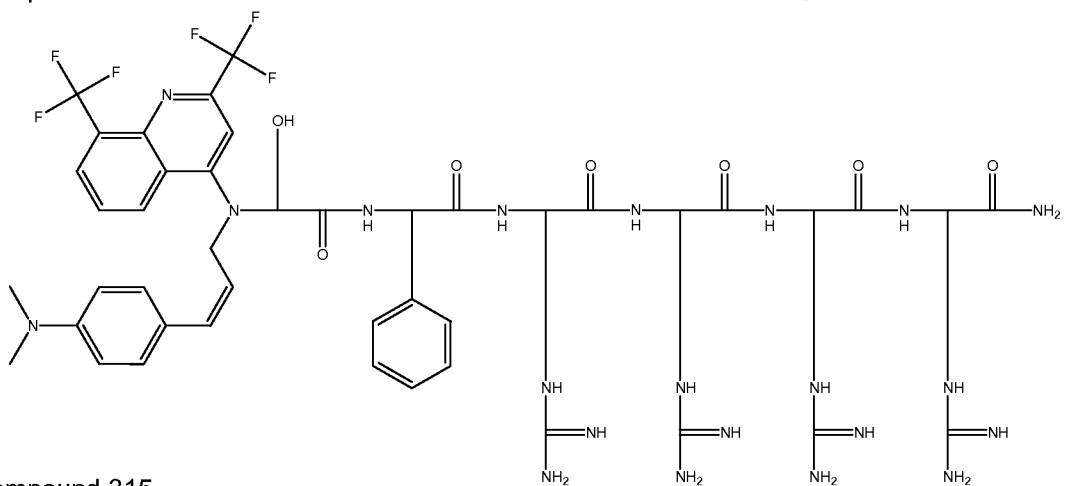
Compound 312



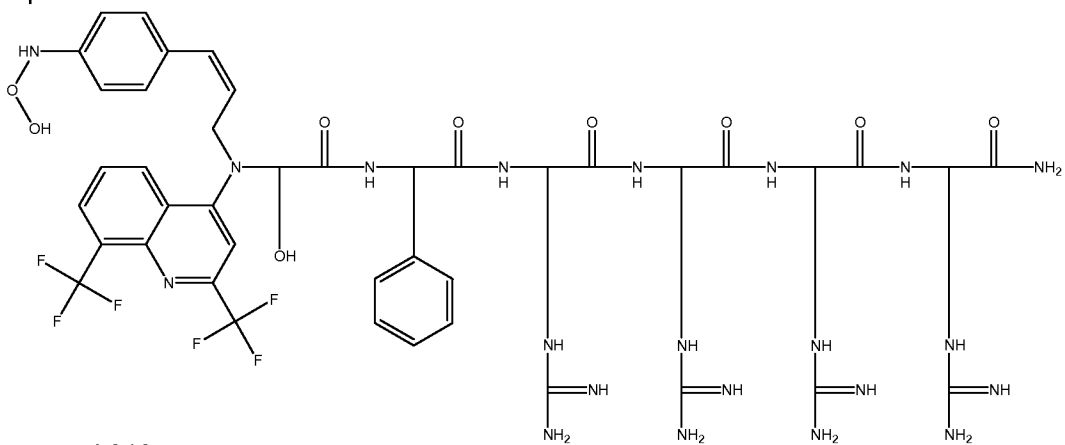
Compound 313



Compound 314

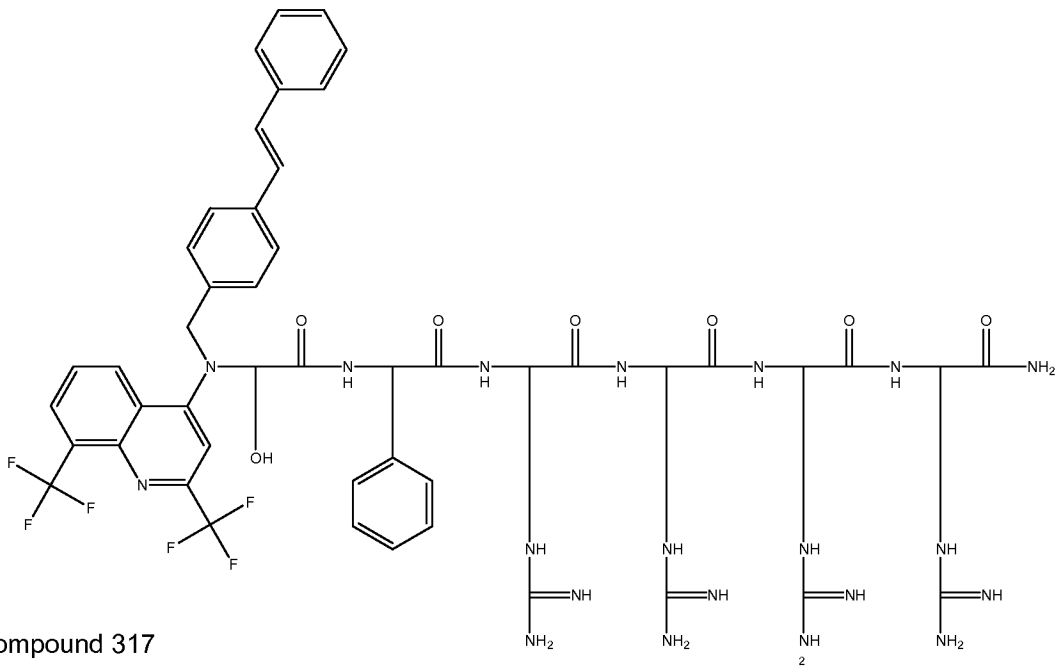


Compound 315

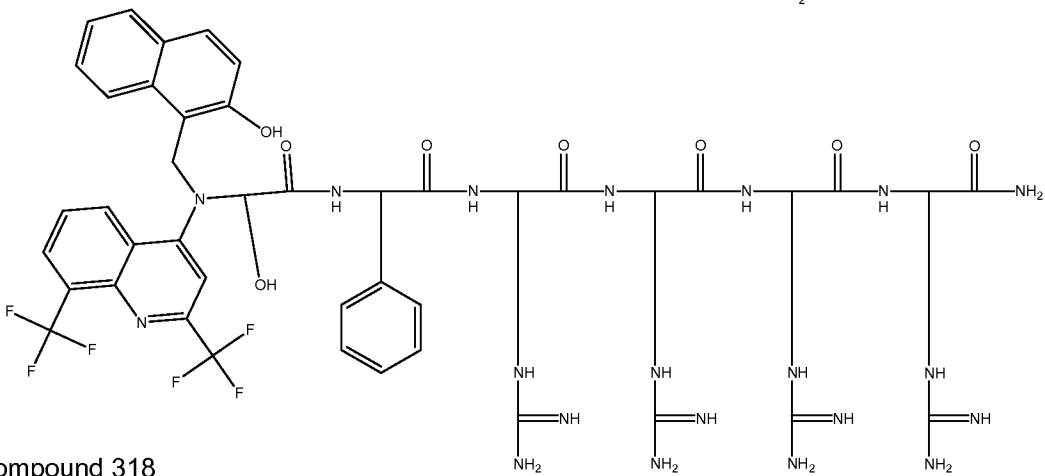


Compound 316

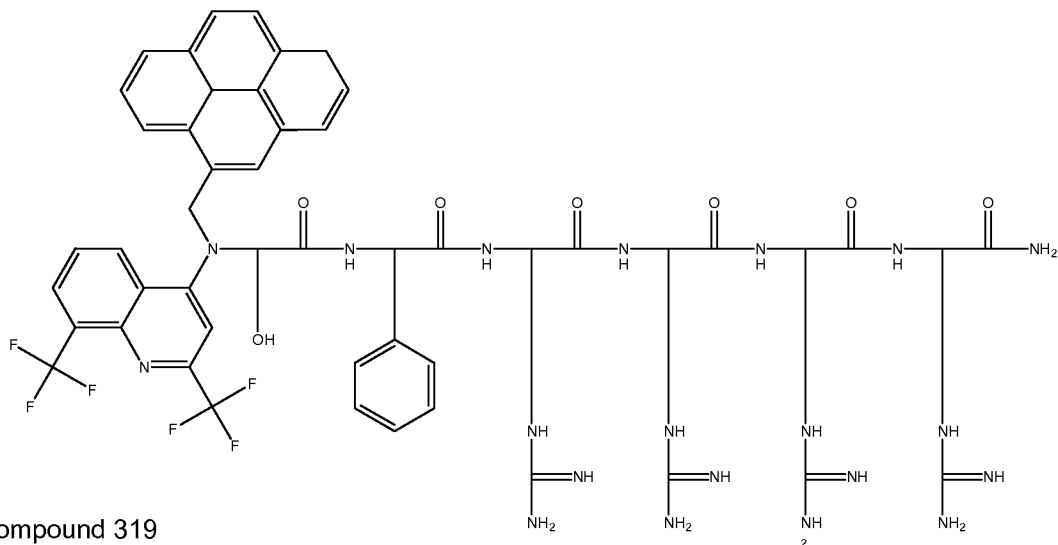
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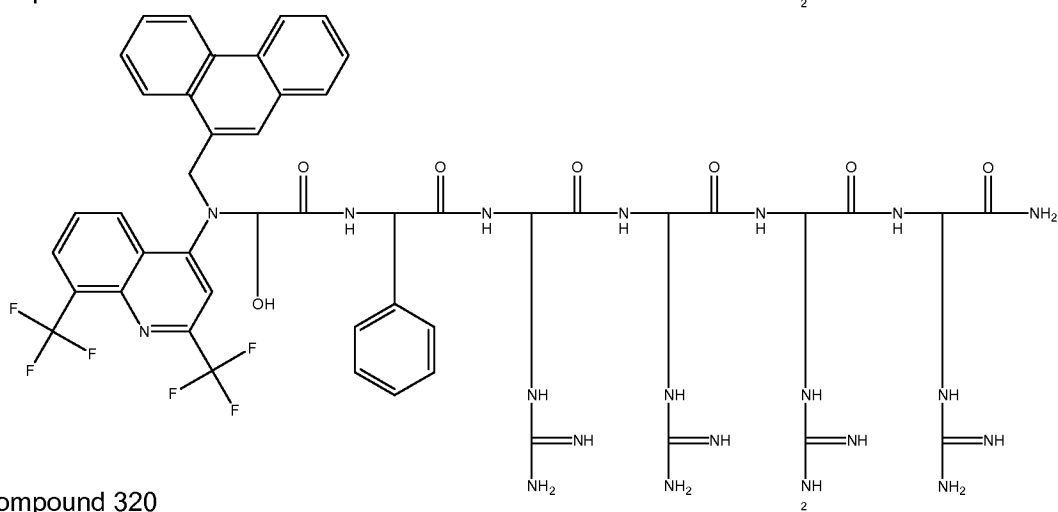
Compound 317



Compound 318

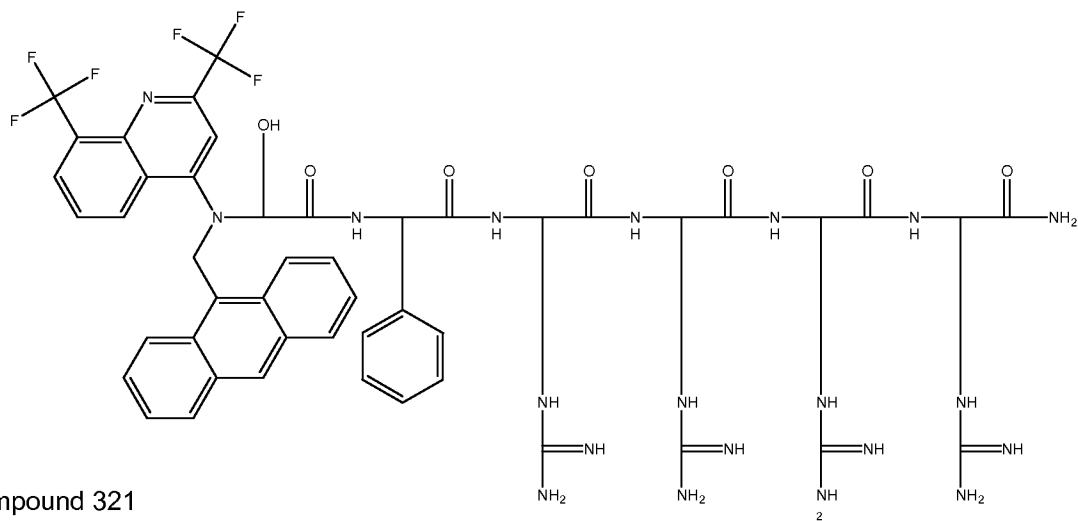


Compound 319

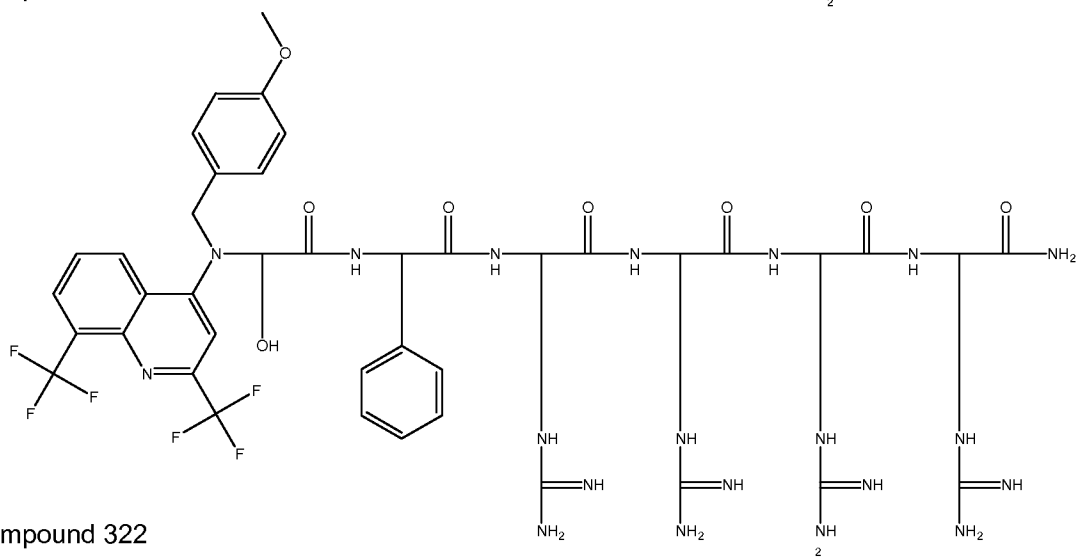


Compound 320

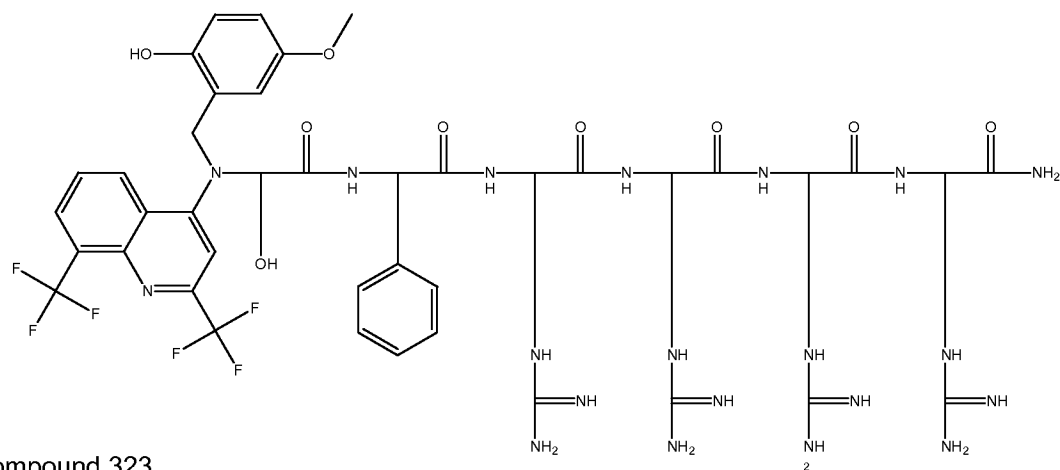
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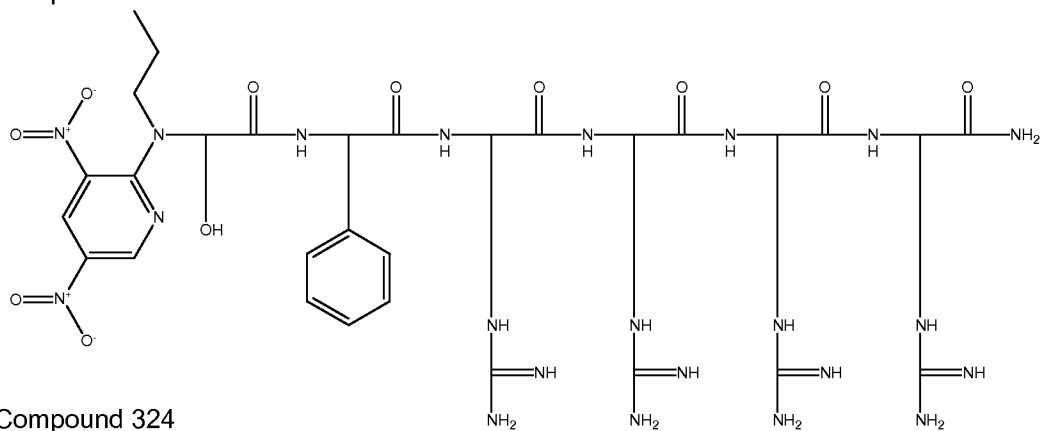
Compound 321



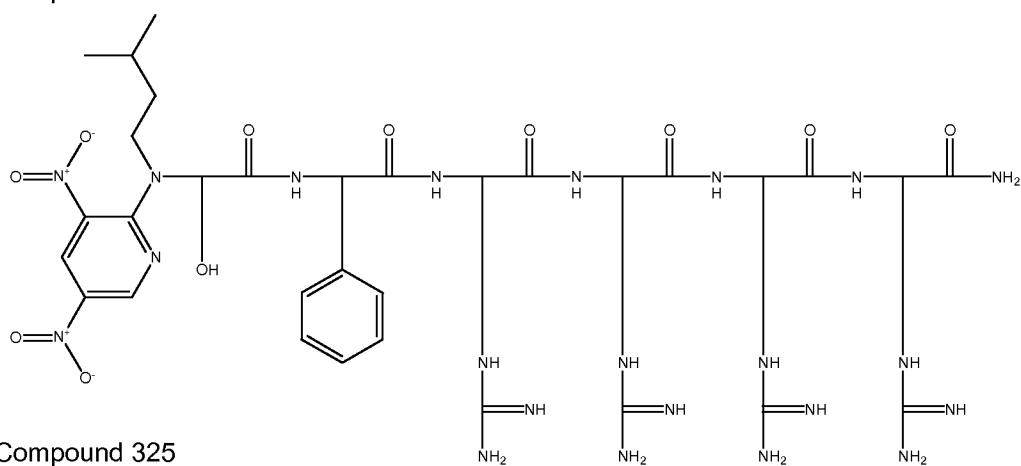
Compound 322



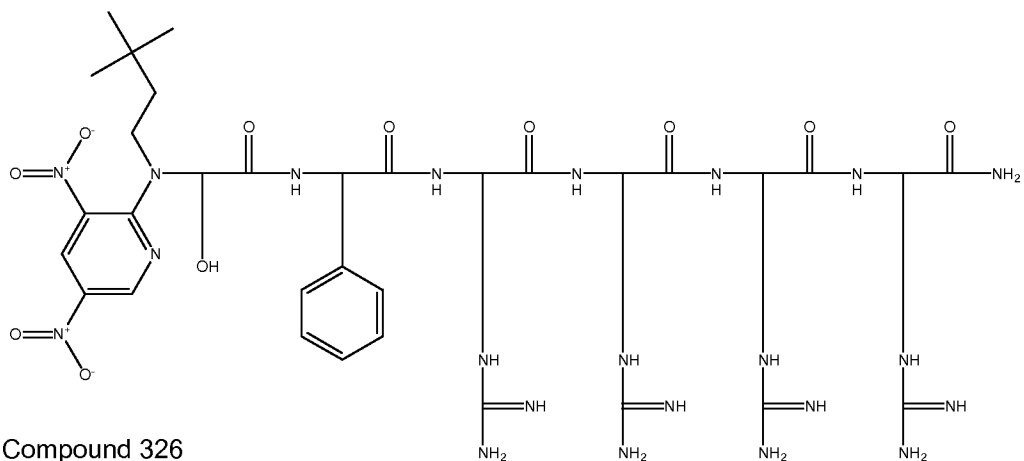
Compound 323



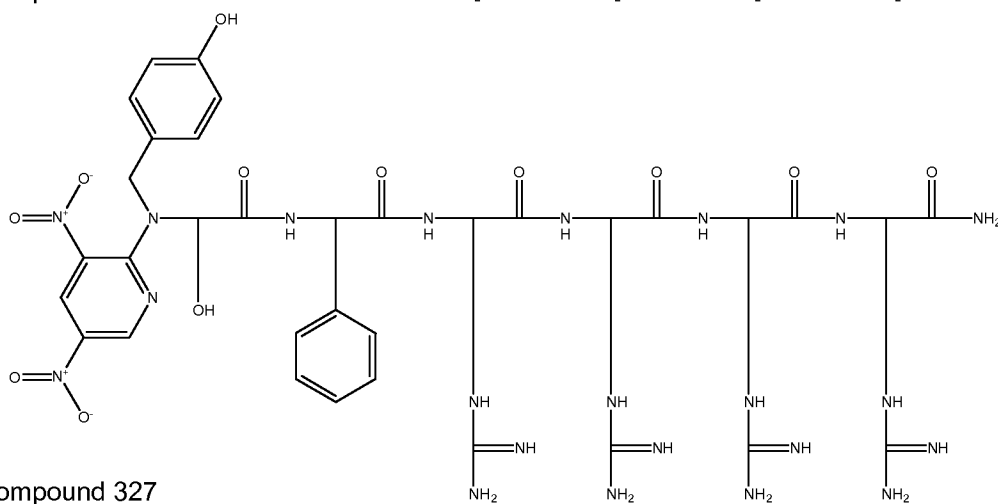
Compound 324



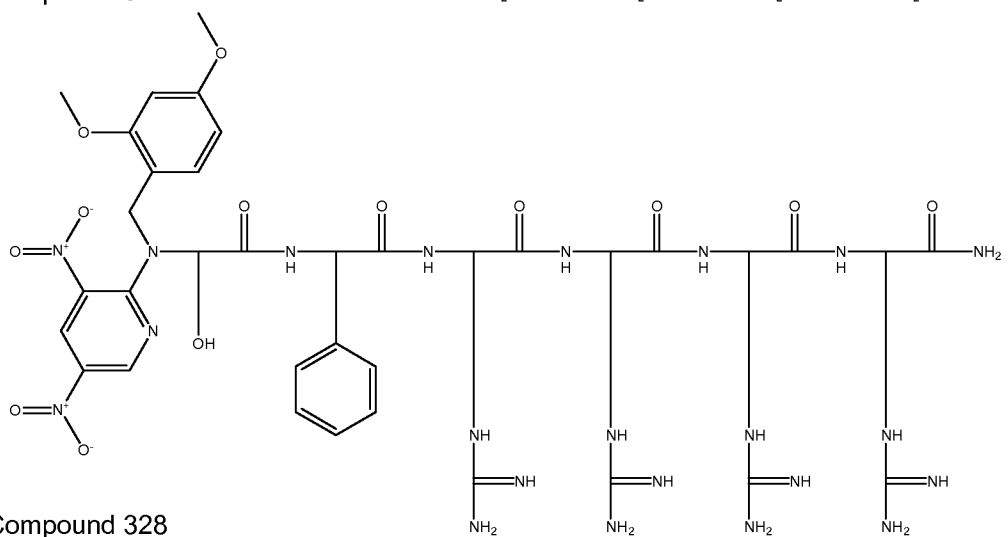
Compound 325



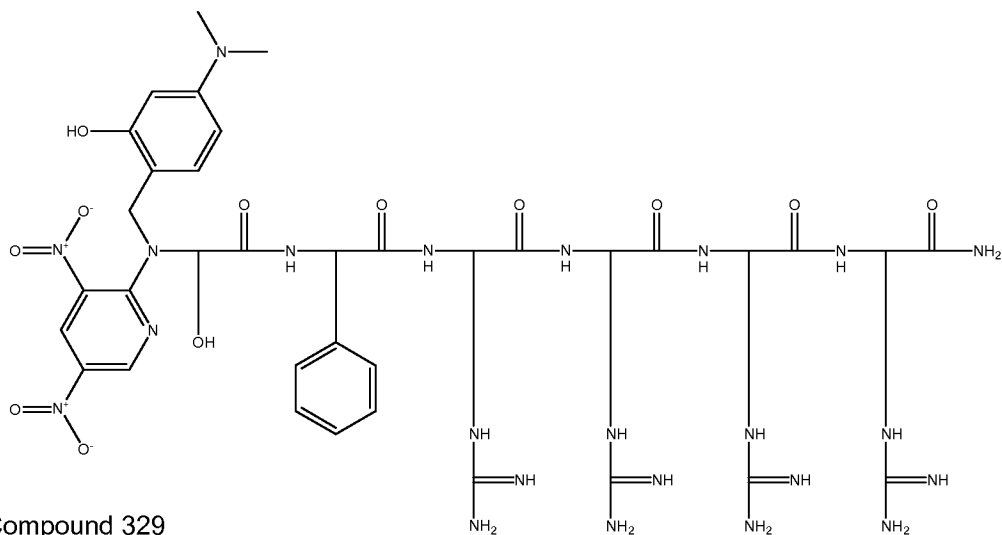
Compound 326



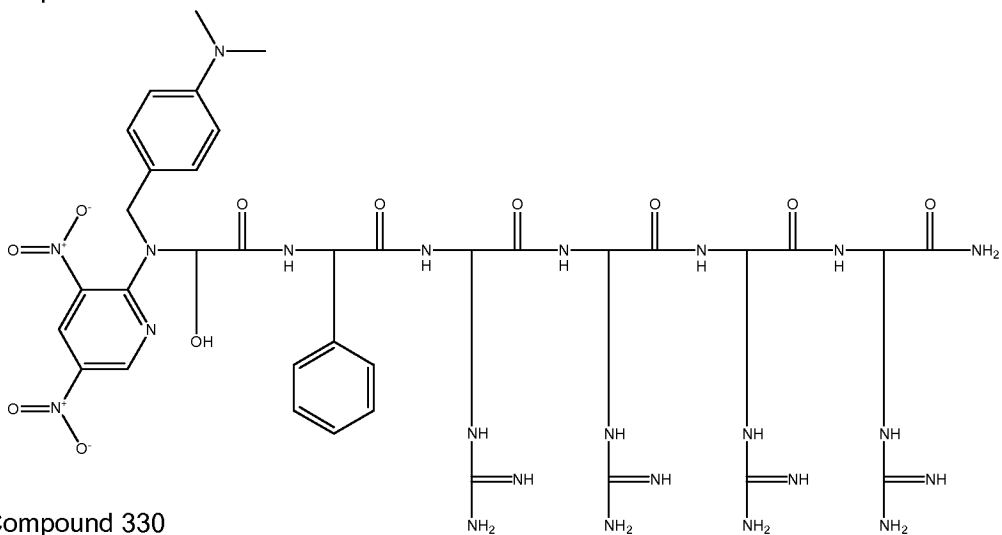
Compound 327



Compound 328

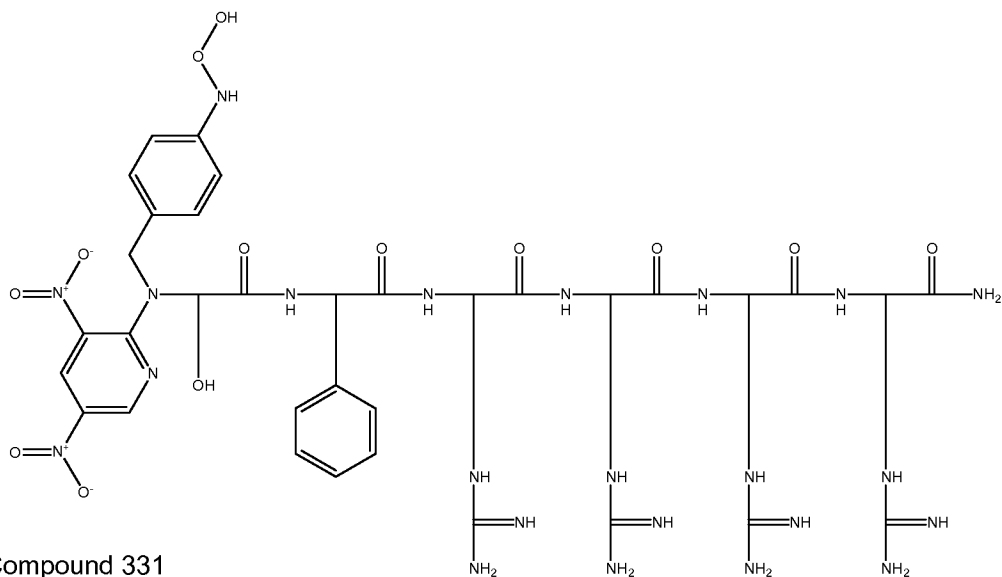


Compound 329

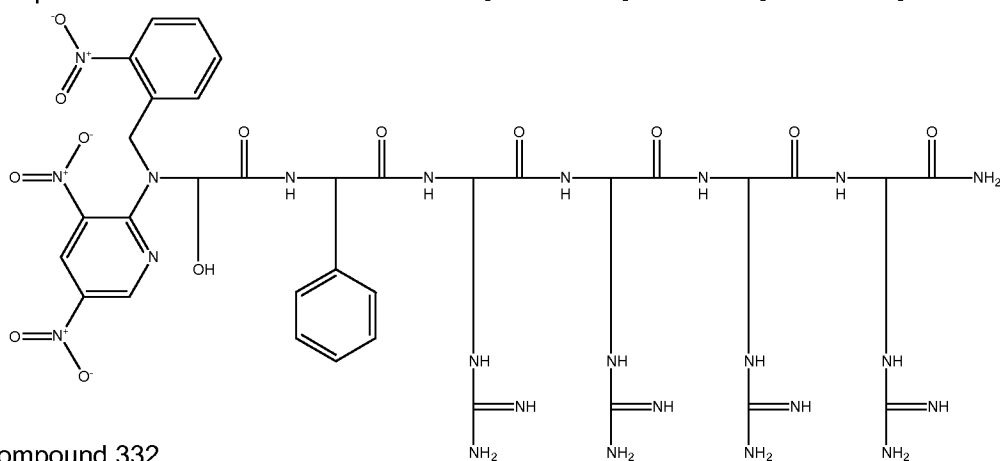


Compound 330

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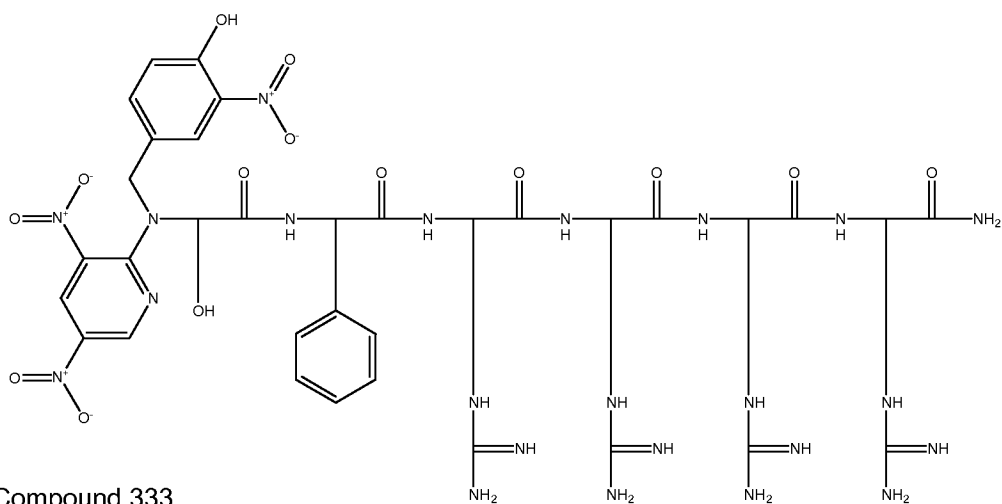


Compound 331

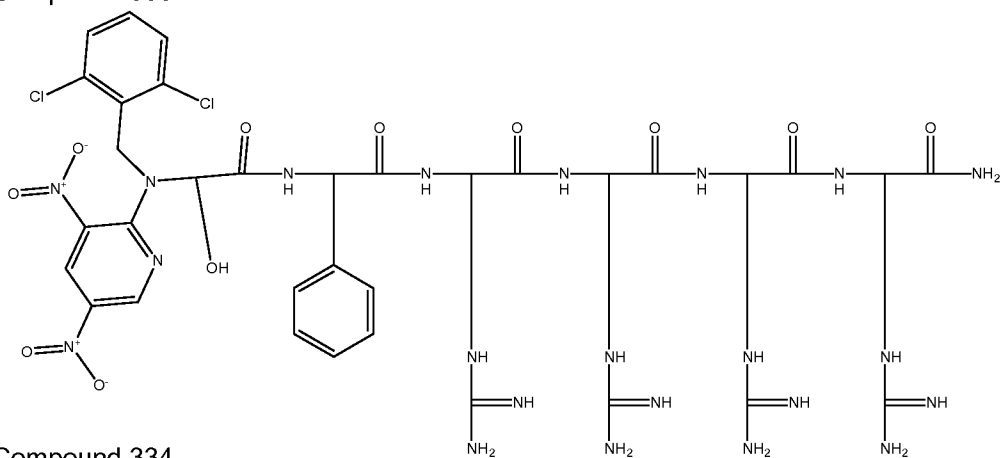


Compound 332

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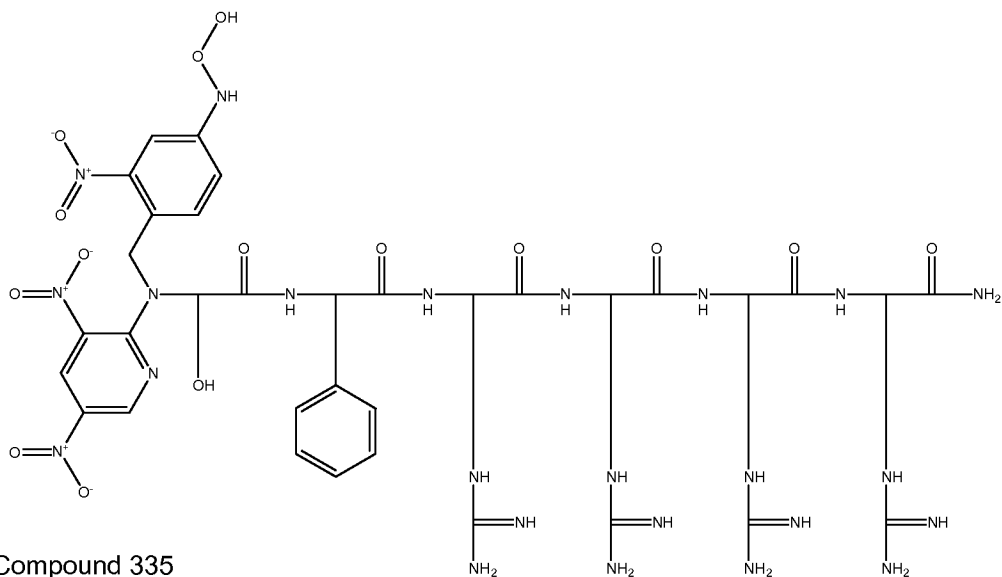


Compound 333

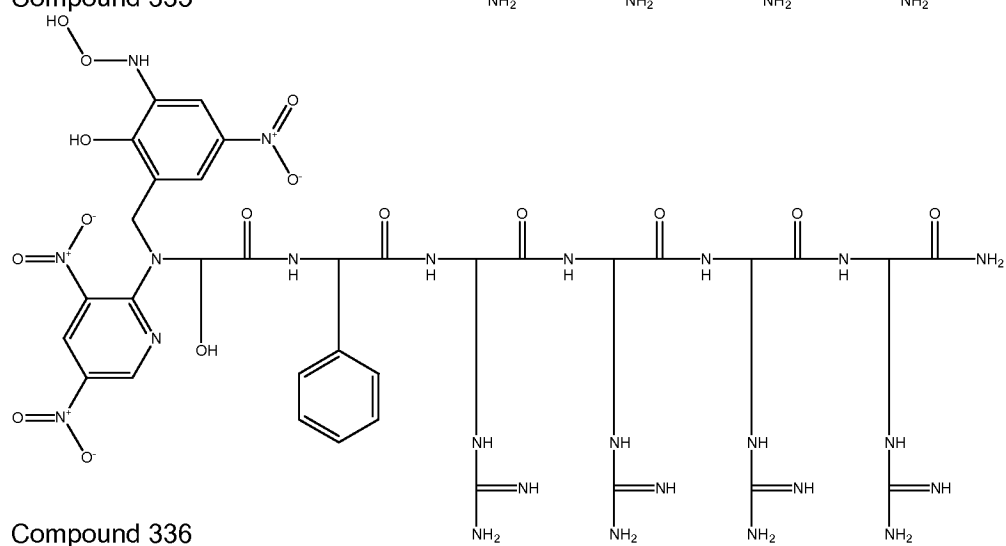


Compound 334

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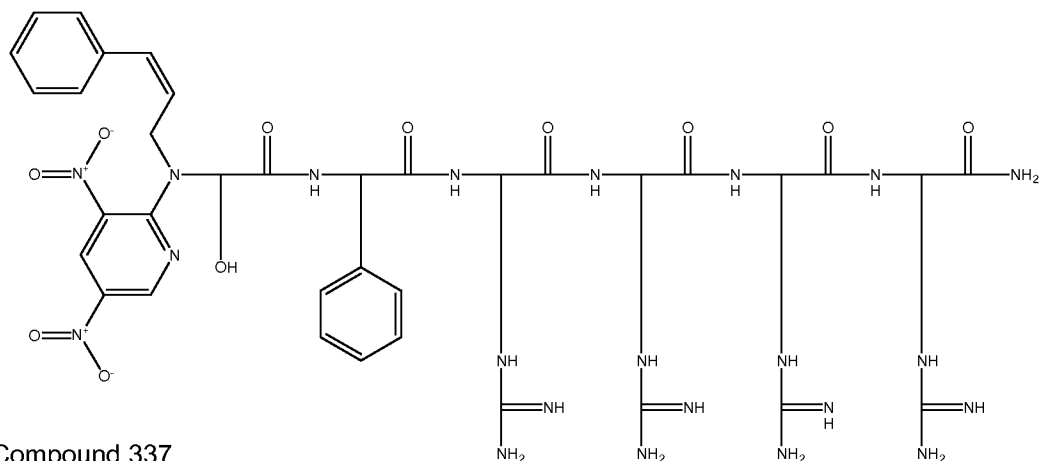


Compound 335

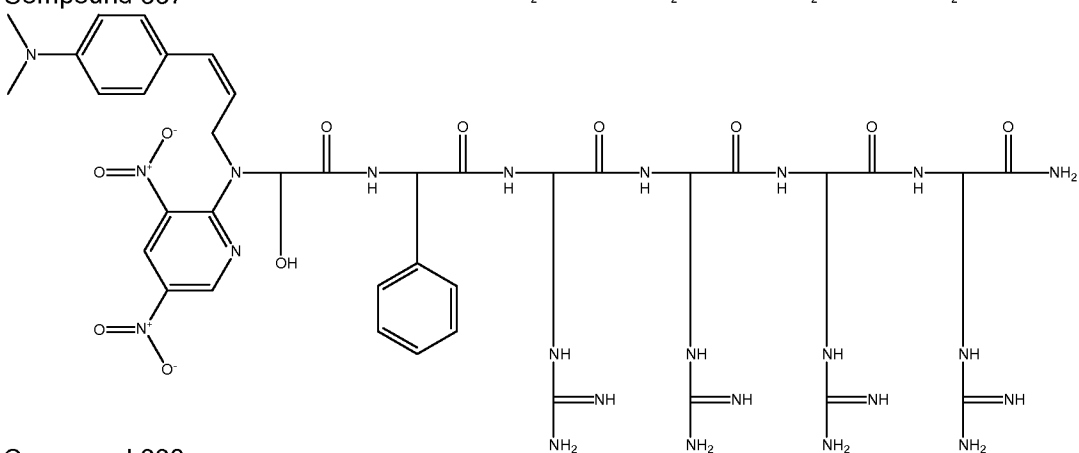


Compound 336

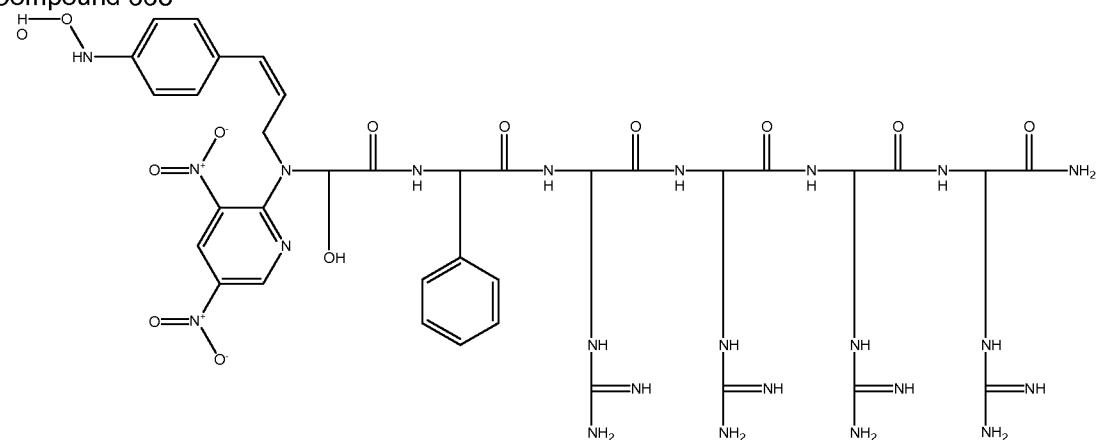
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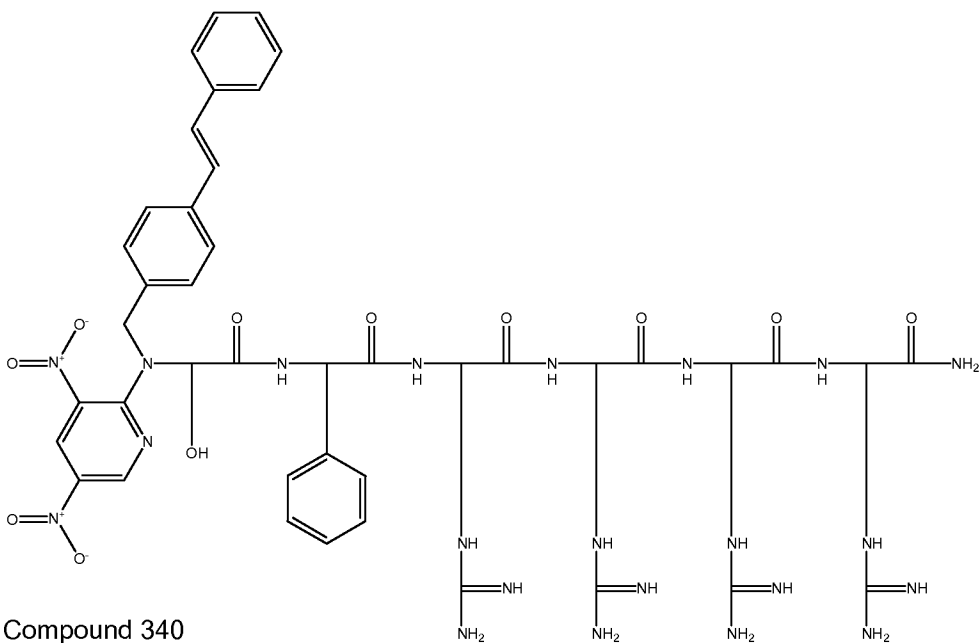
Compound 337



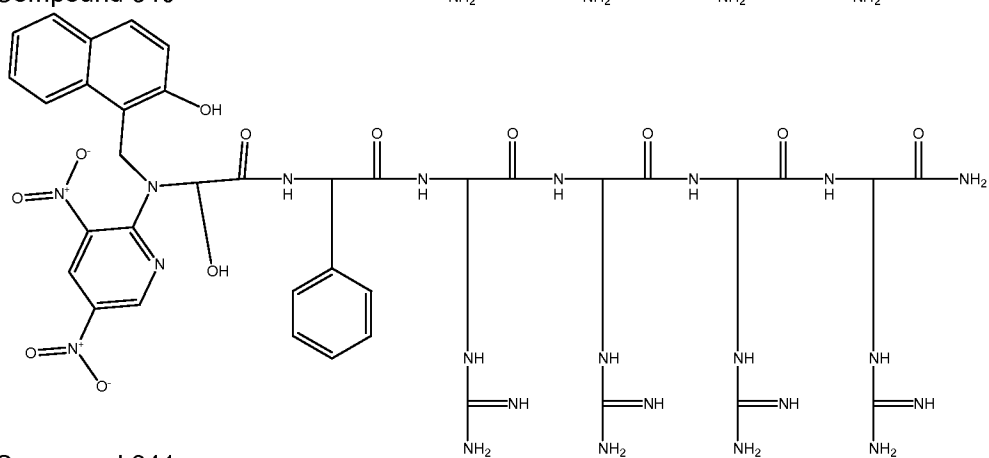
Compound 338



Compound 339

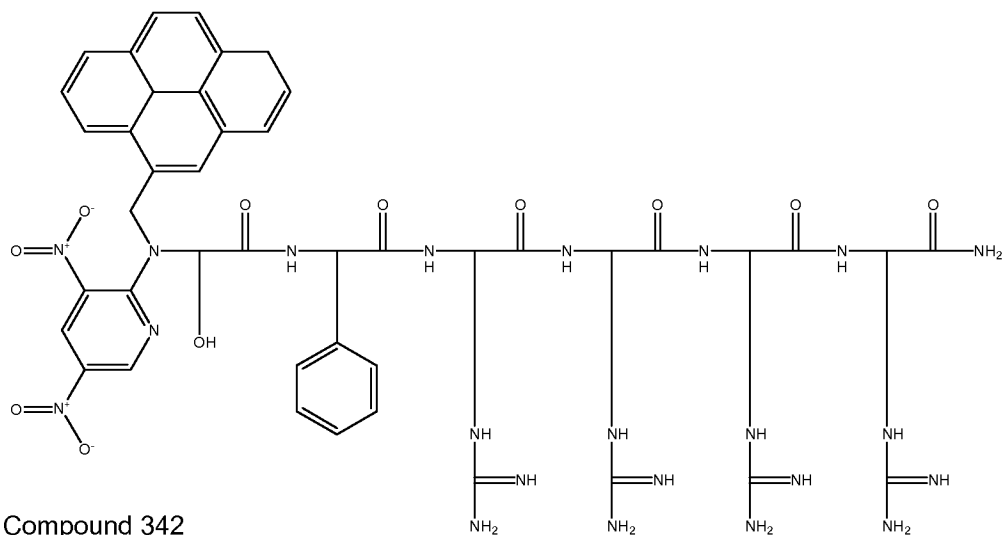


Compound 340

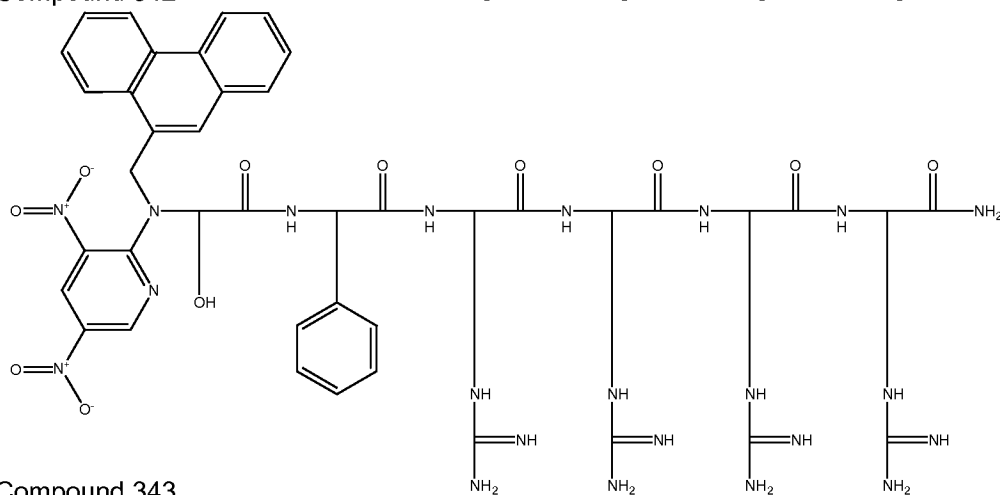


Compound 341

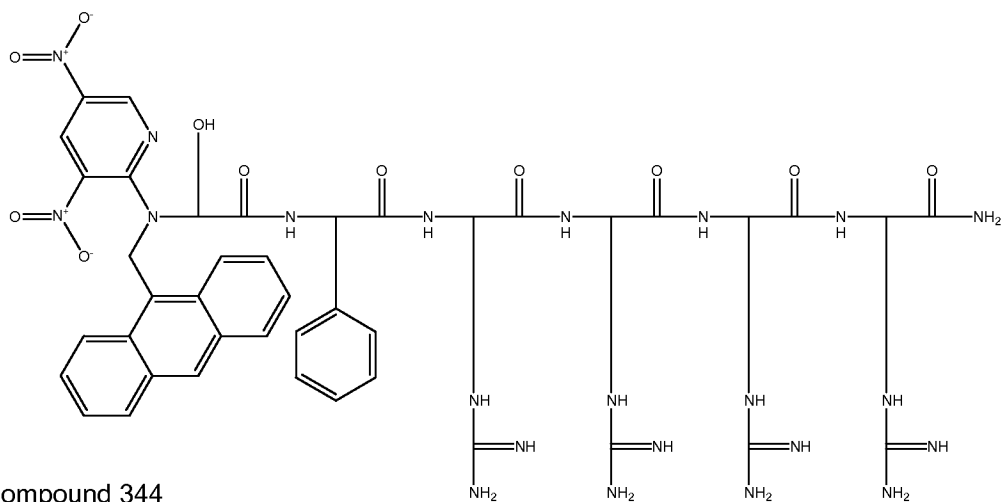
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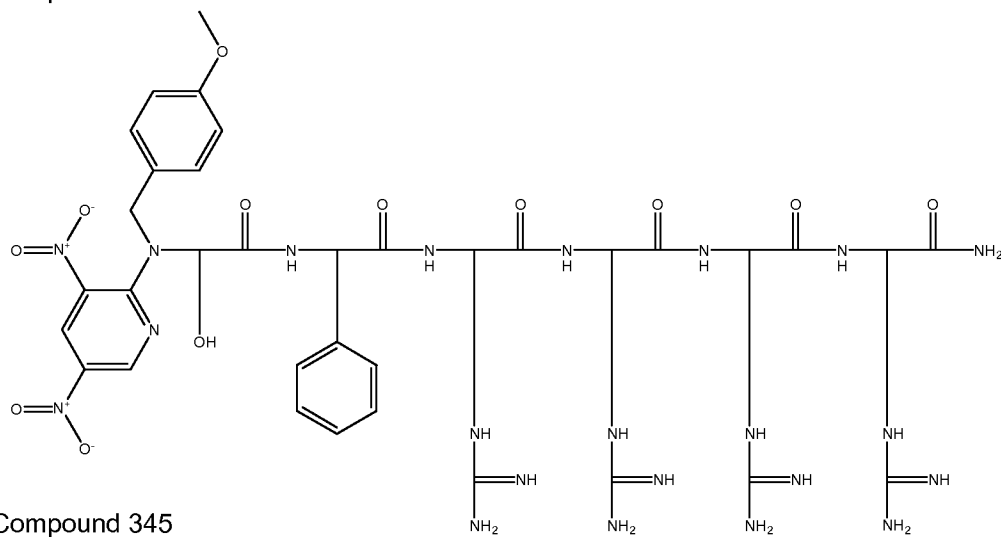
Compound 342



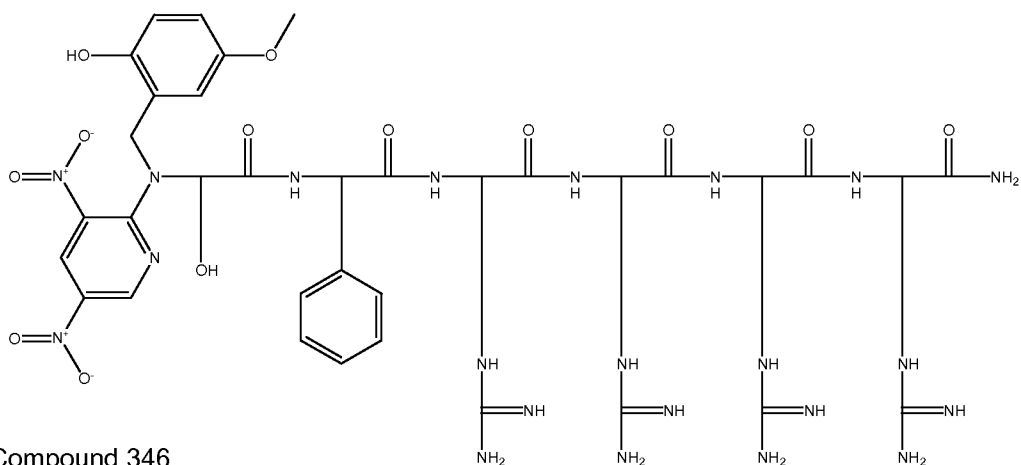
Compound 343



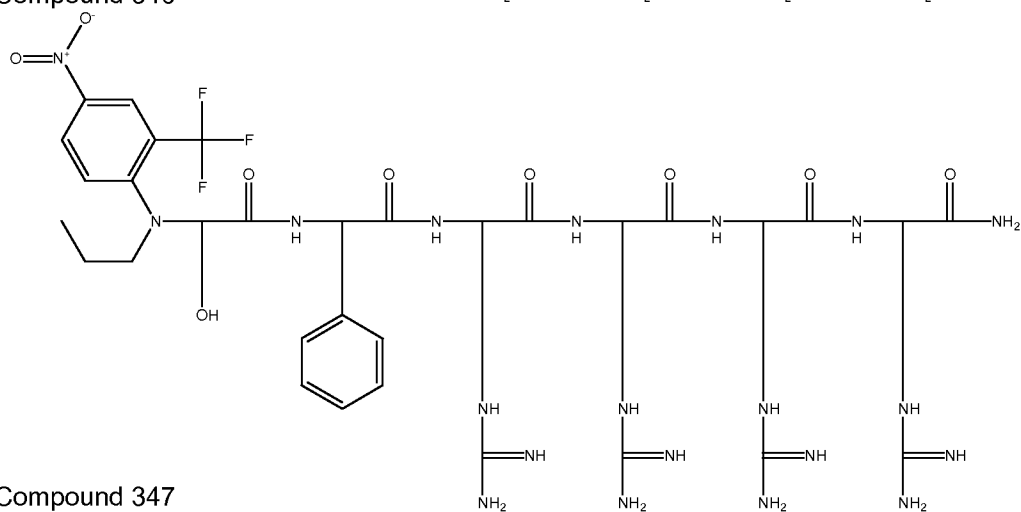
Compound 344



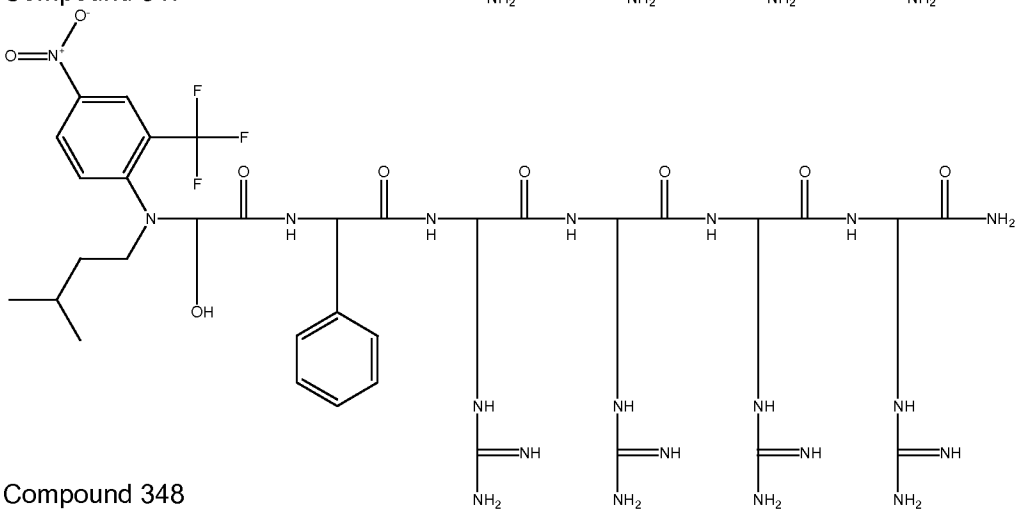
Compound 345



Compound 346

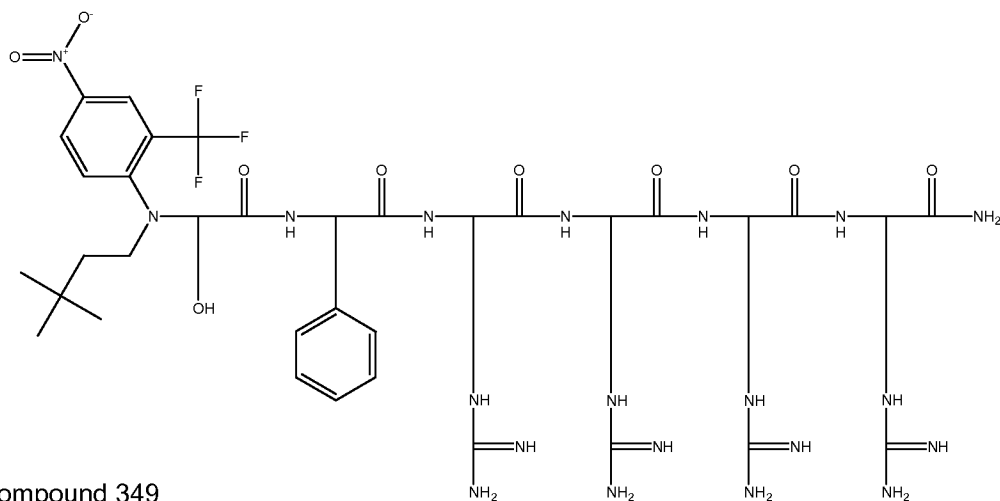


Compound 347

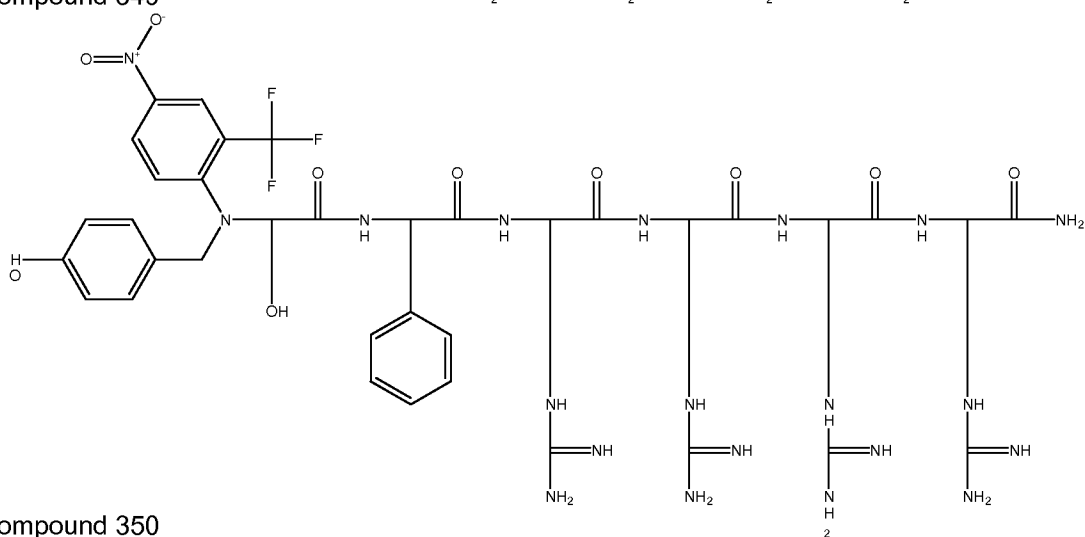


Compound 348

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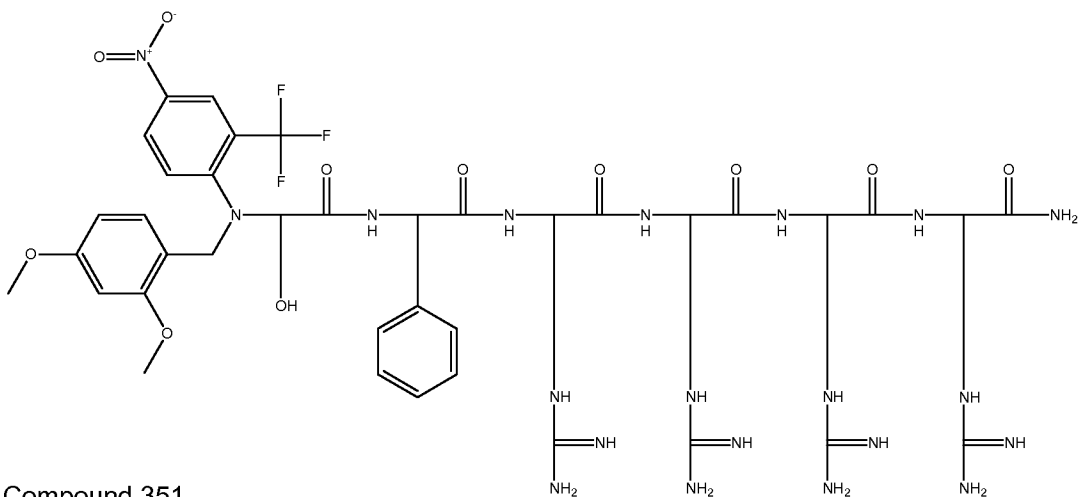


Compound 349

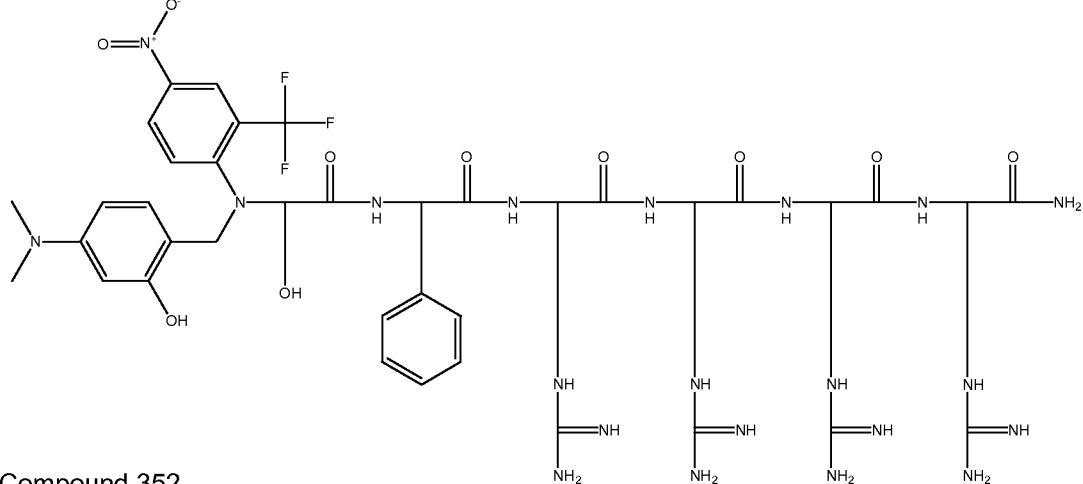


Compound 350

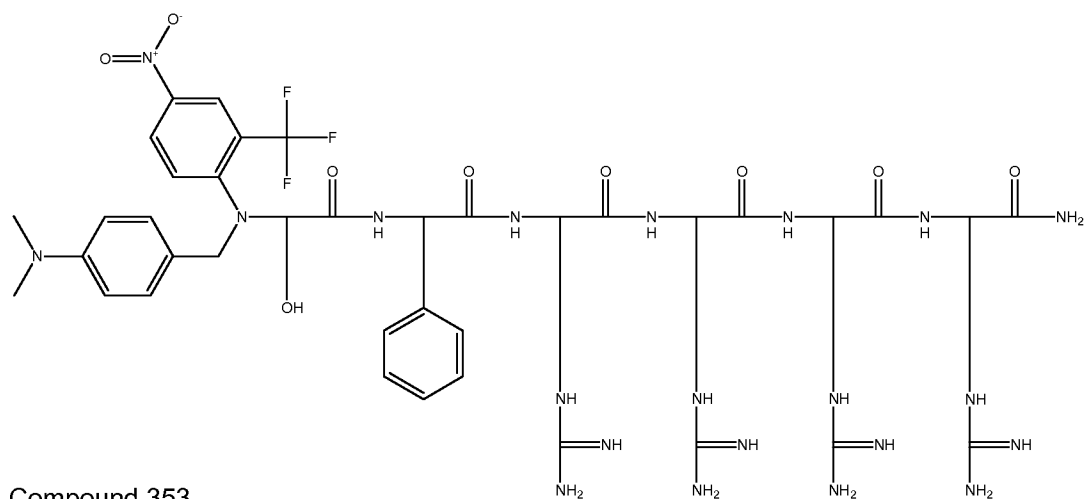
439227.1



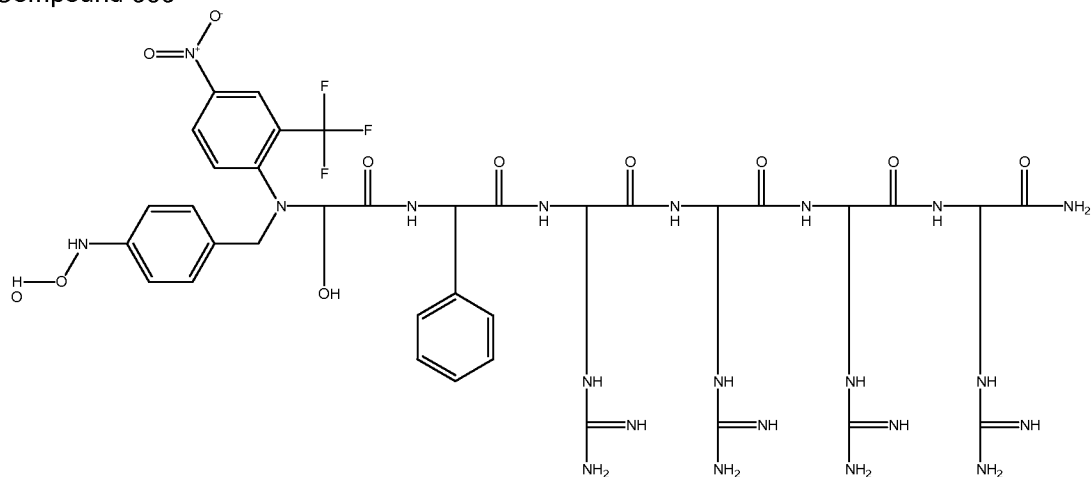
Compound 351



Compound 352

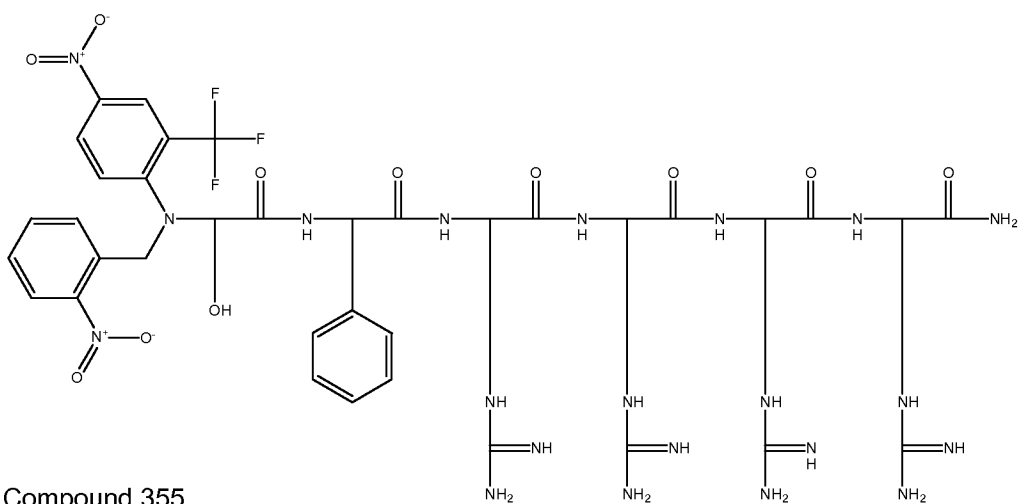


Compound 353

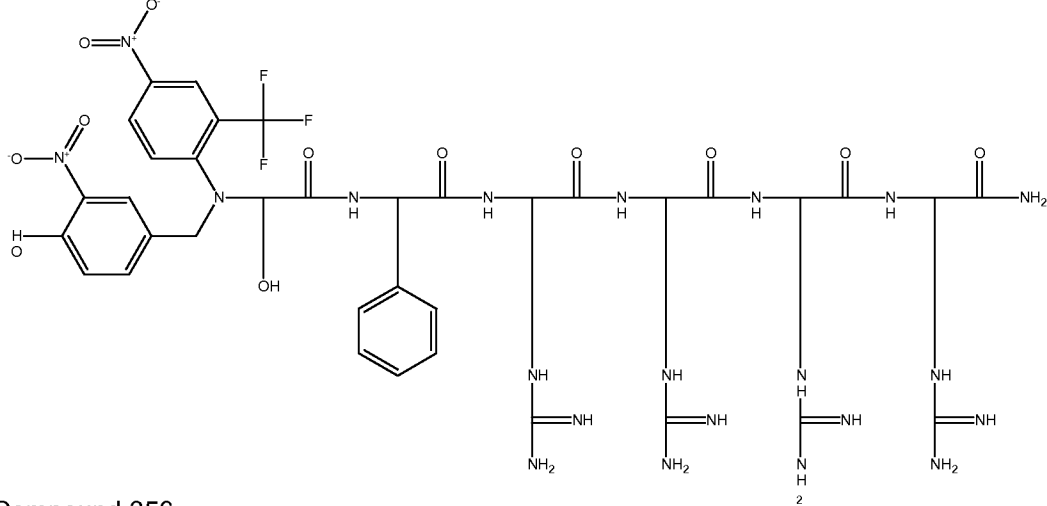


Compound 354

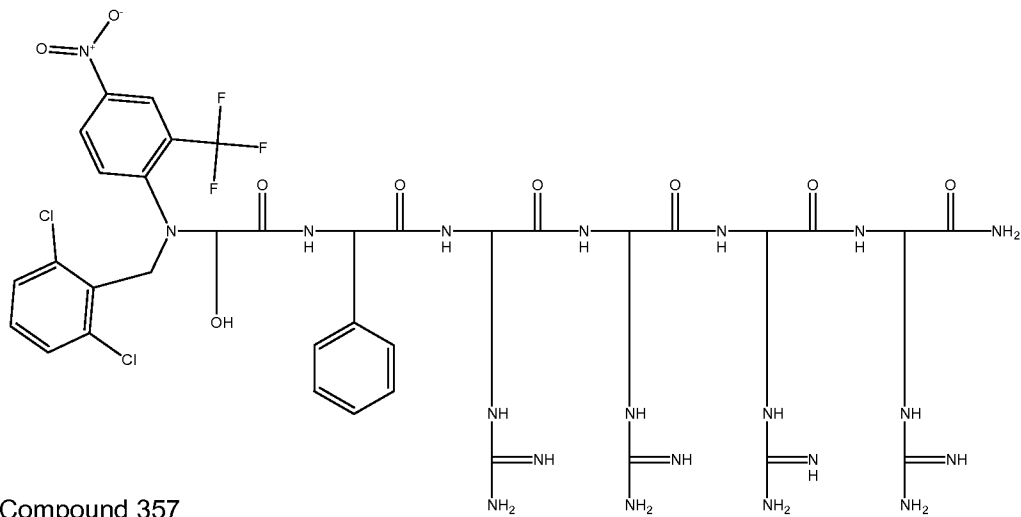
439227.1



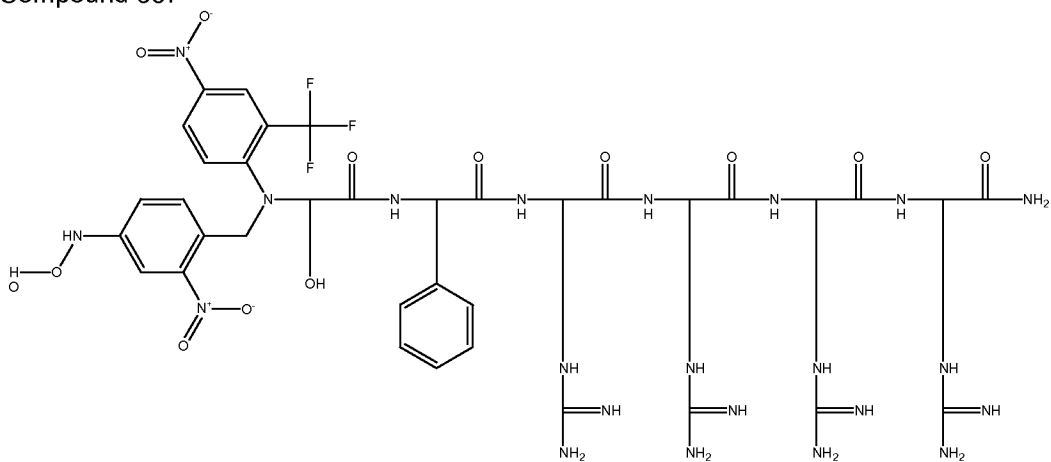
Compound 355



Compound 356

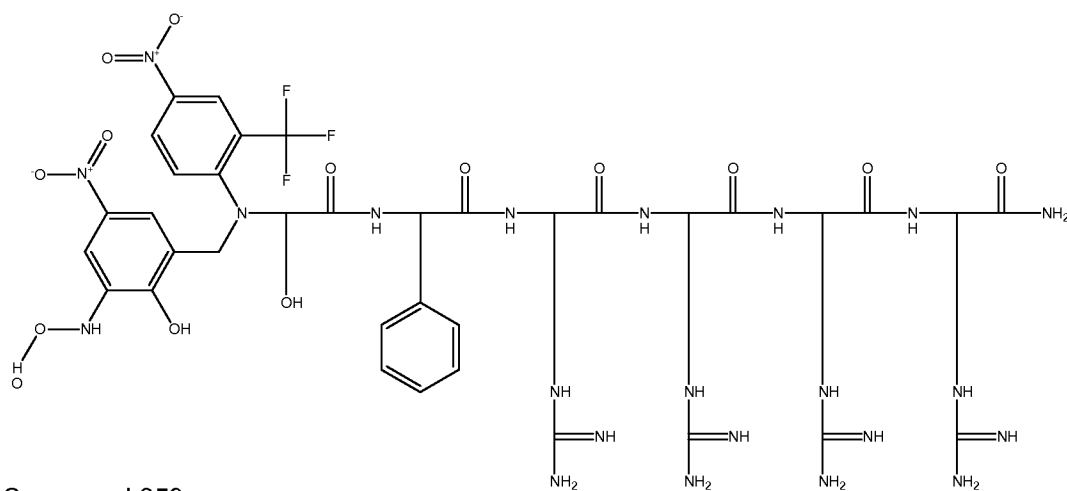


Compound 357

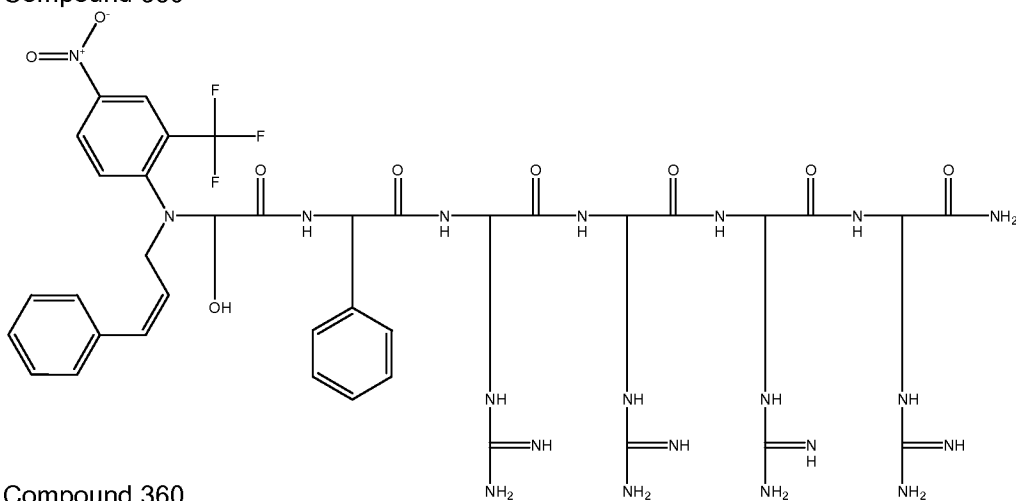


Compound 358

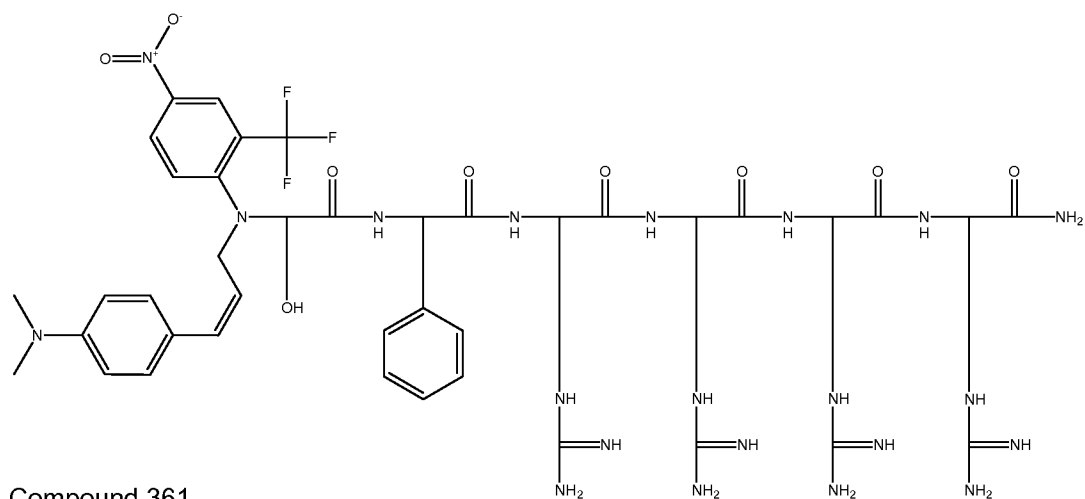
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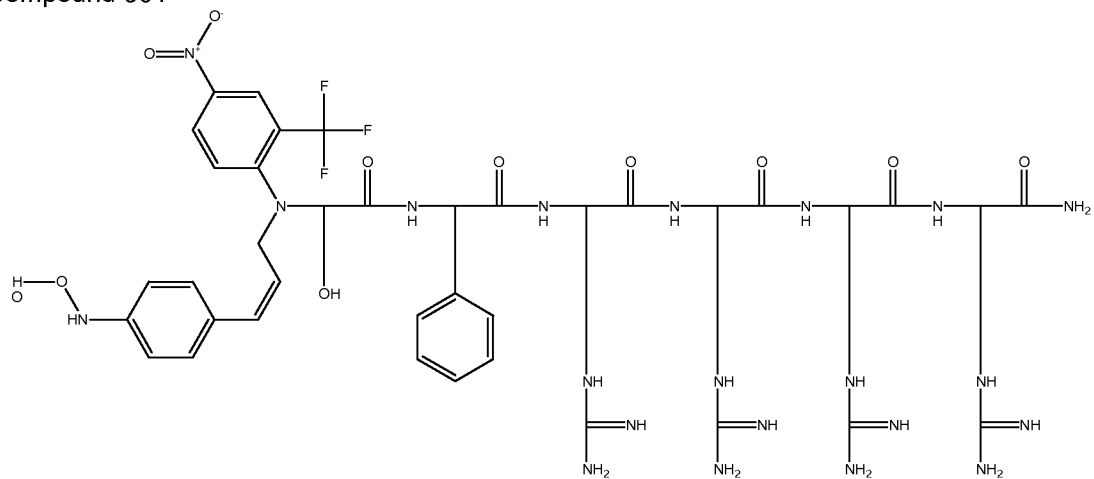
Compound 359



Compound 360

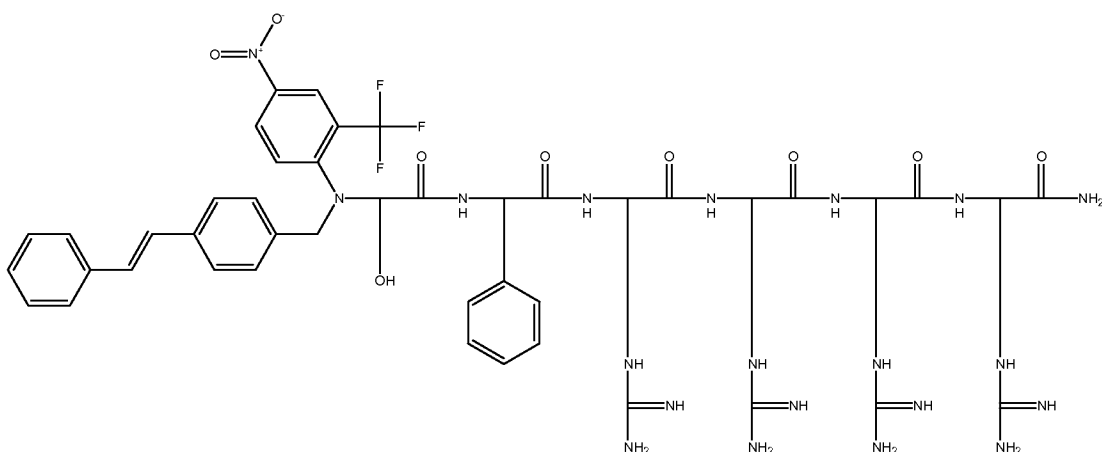


Compound 361

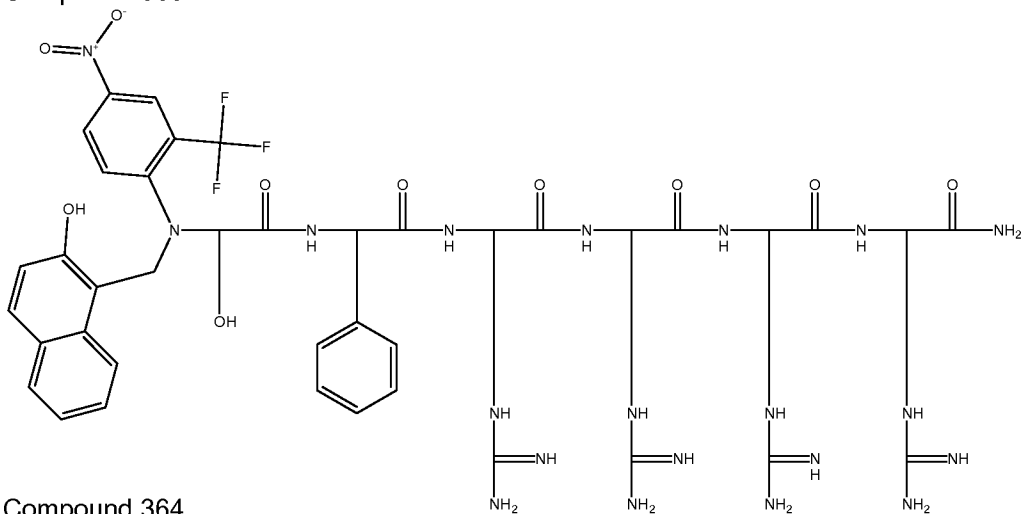


Compound 362

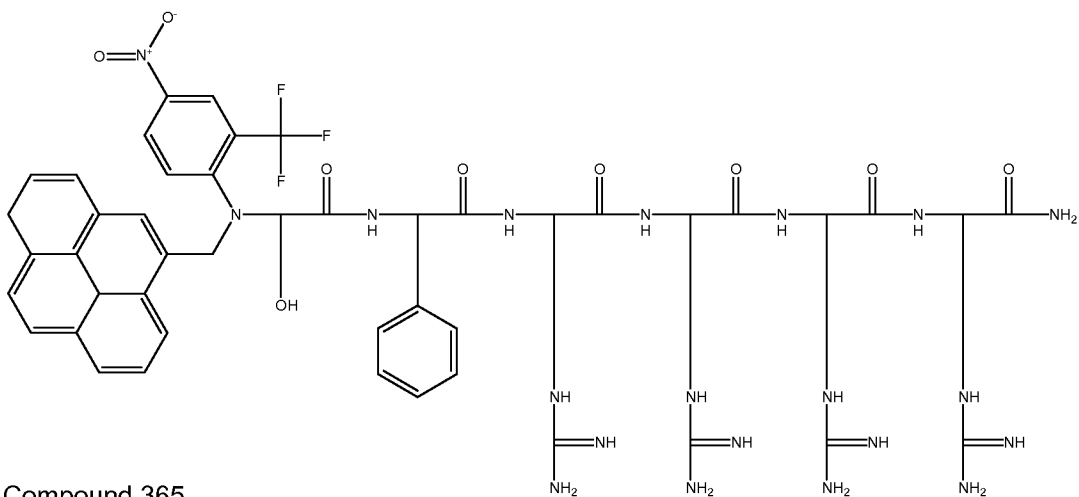
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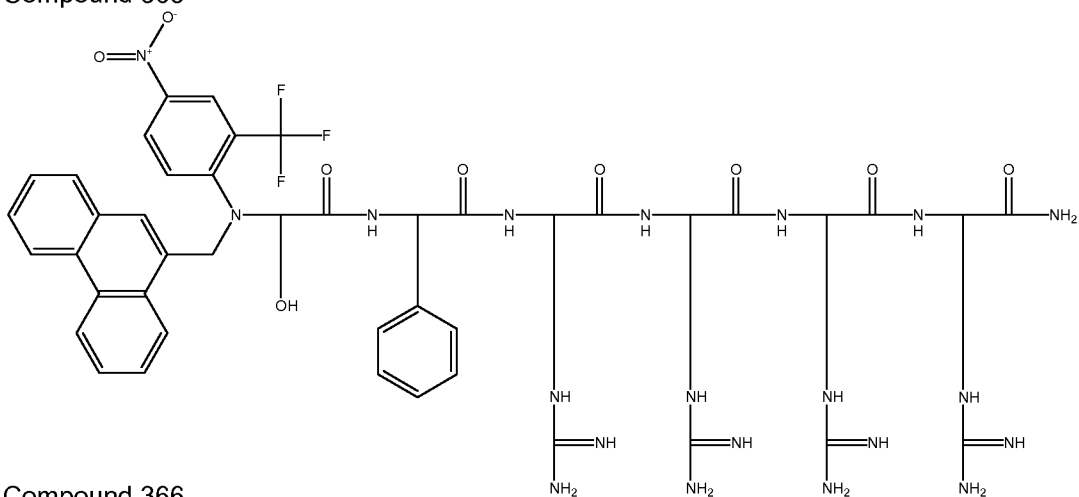
Compound 363



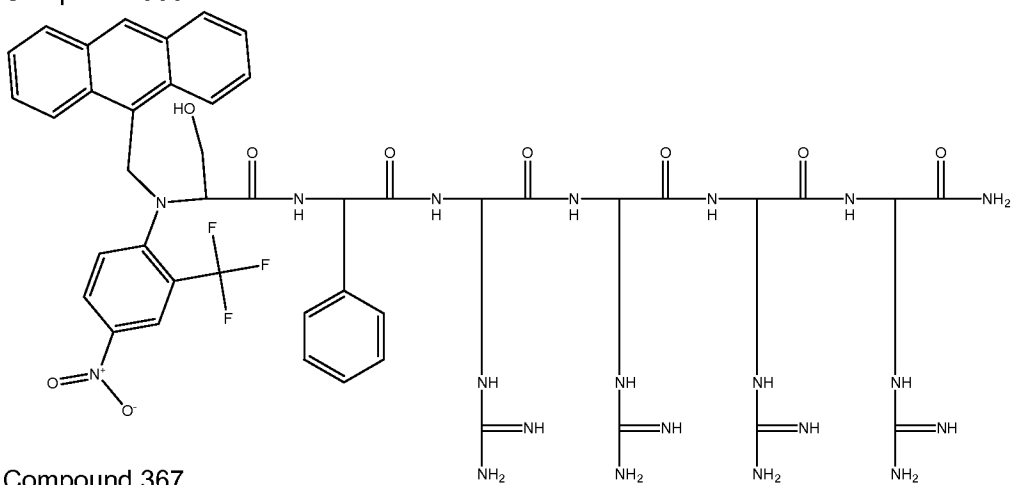
Compound 364



Compound 365

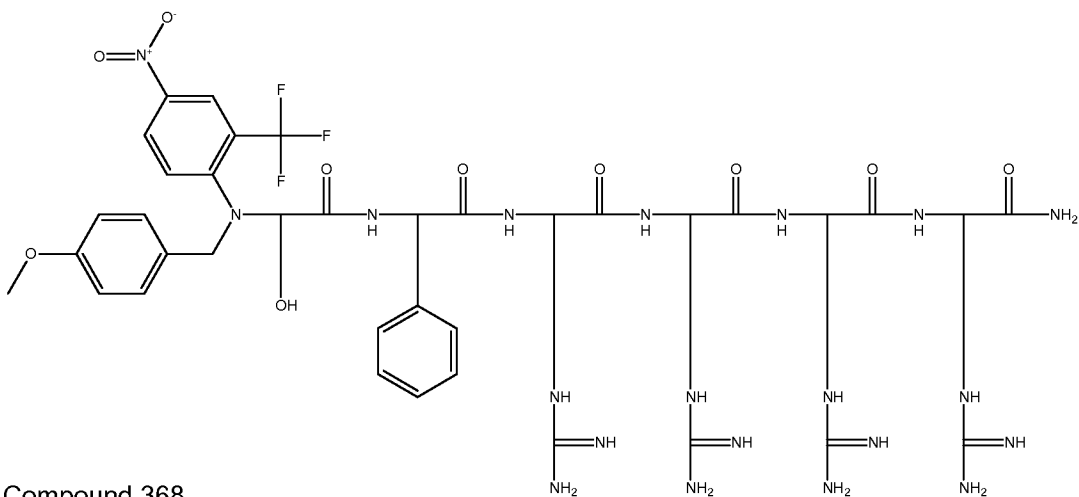


Compound 366

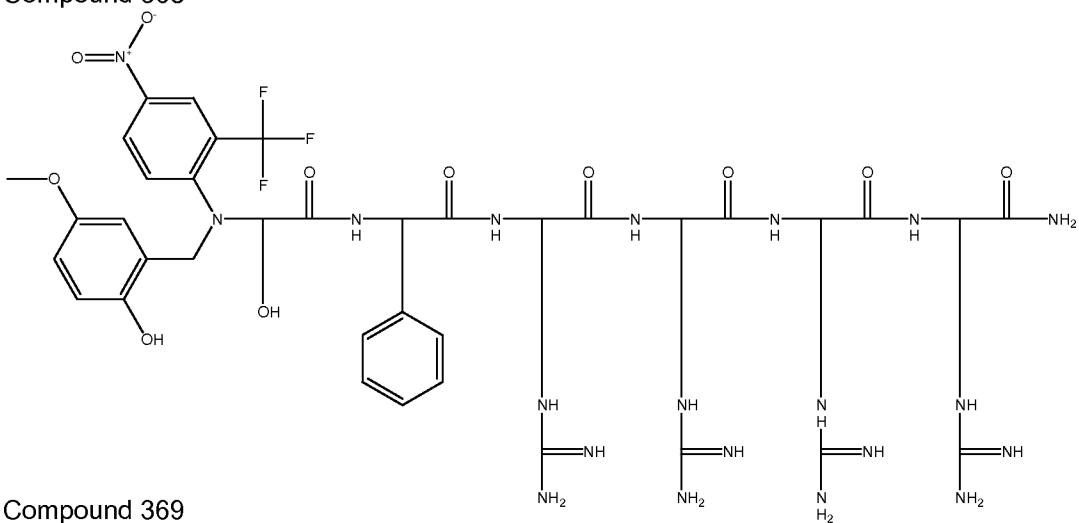


Compound 367

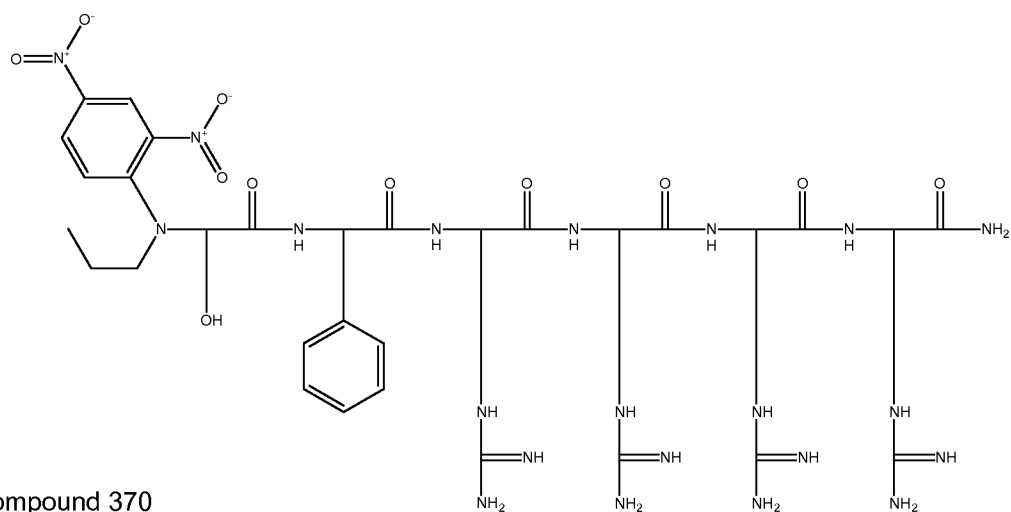
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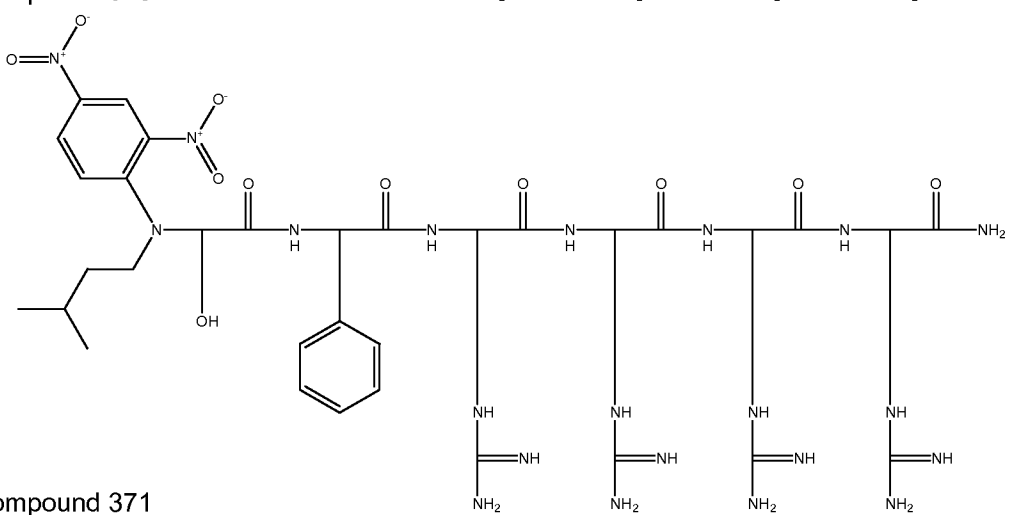
Compound 368



Compound 369

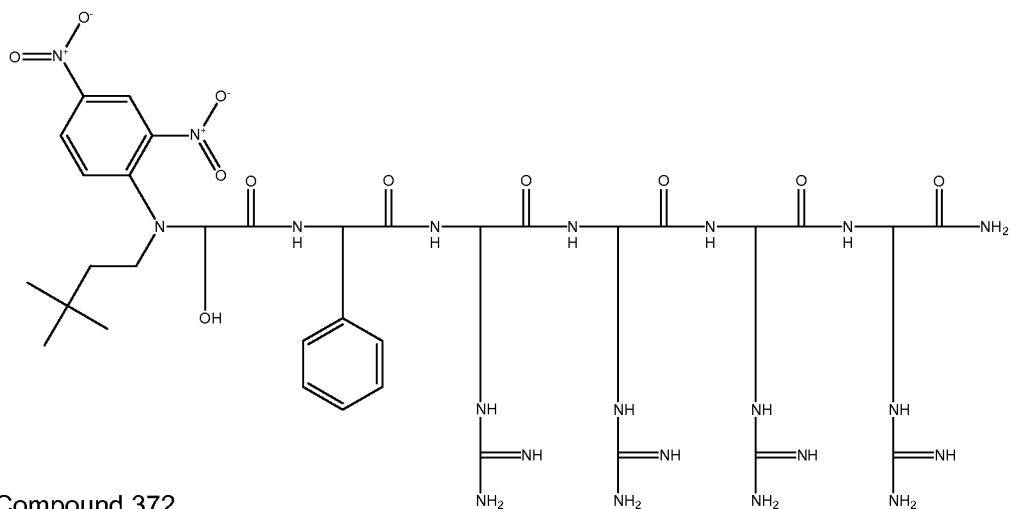


Compound 370

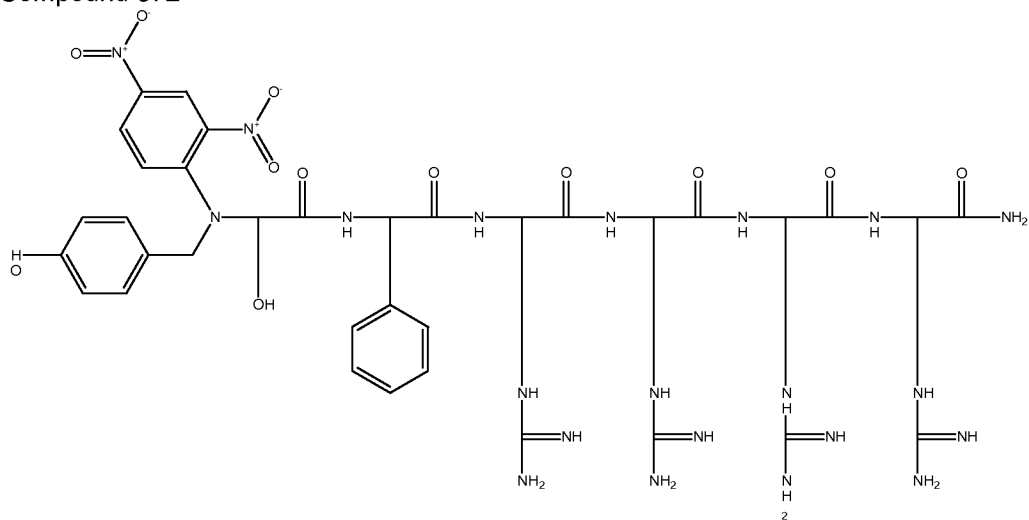


Compound 371

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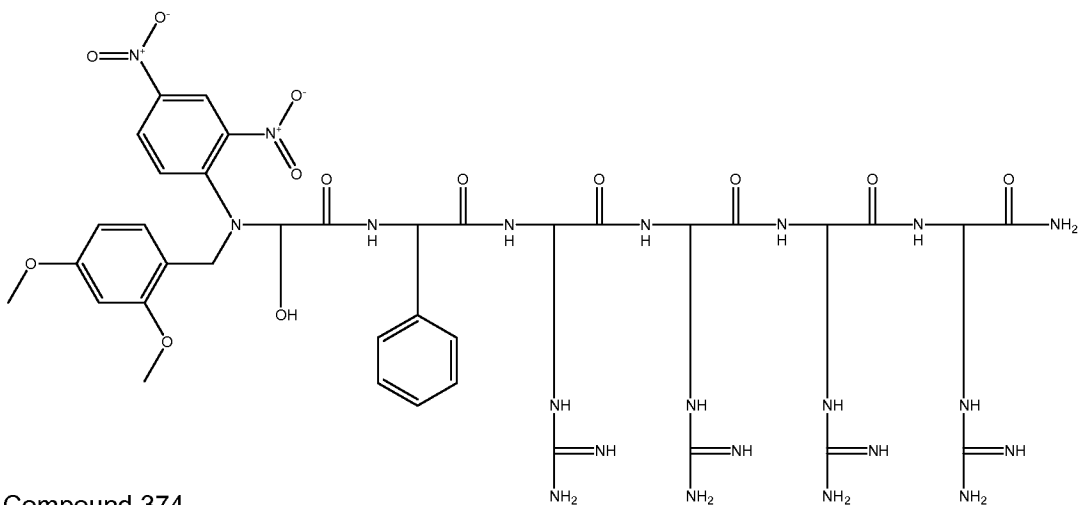


Compound 372

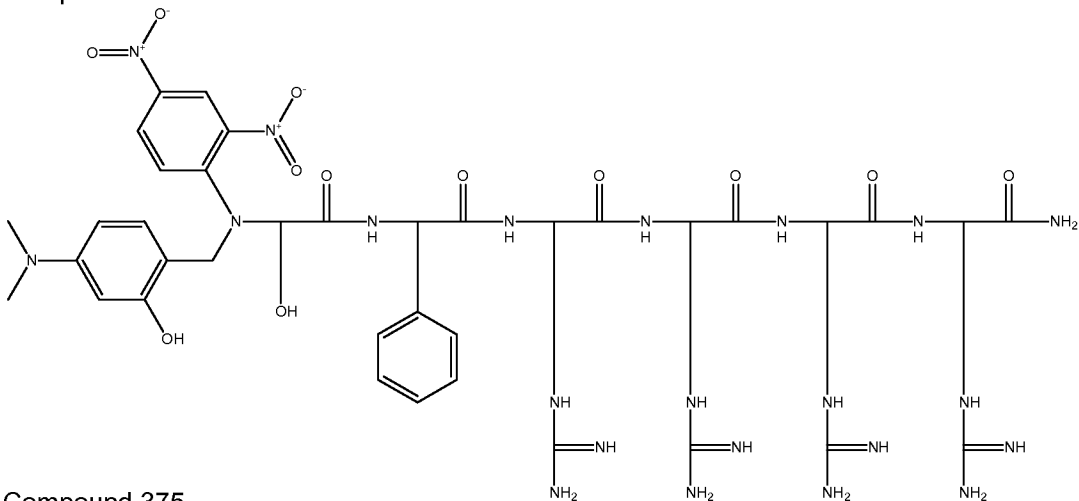


Compound 373

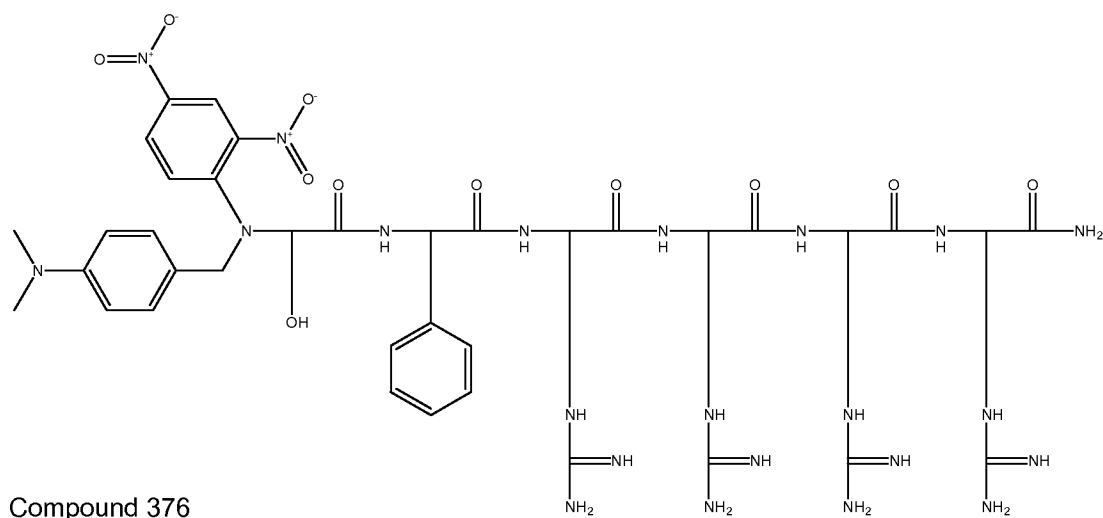
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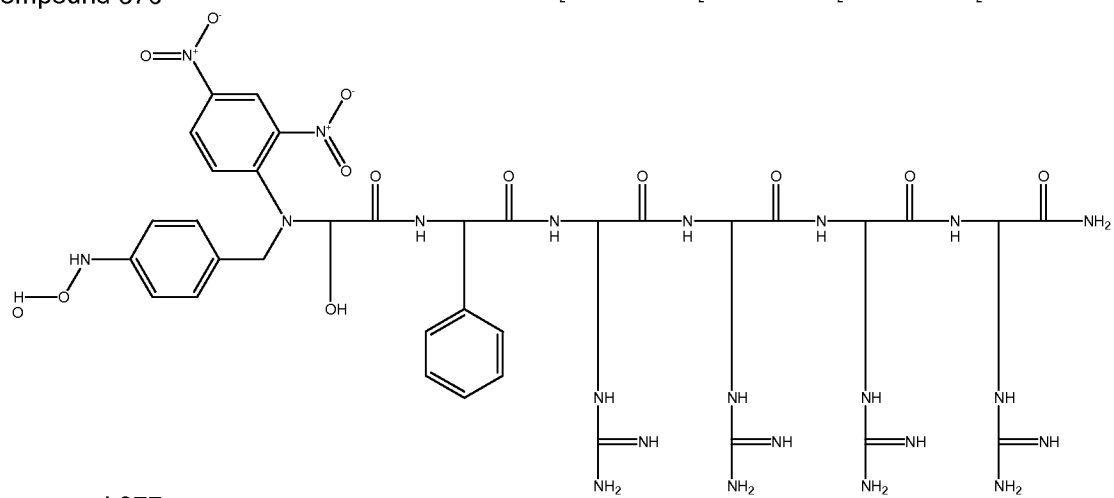
Compound 374



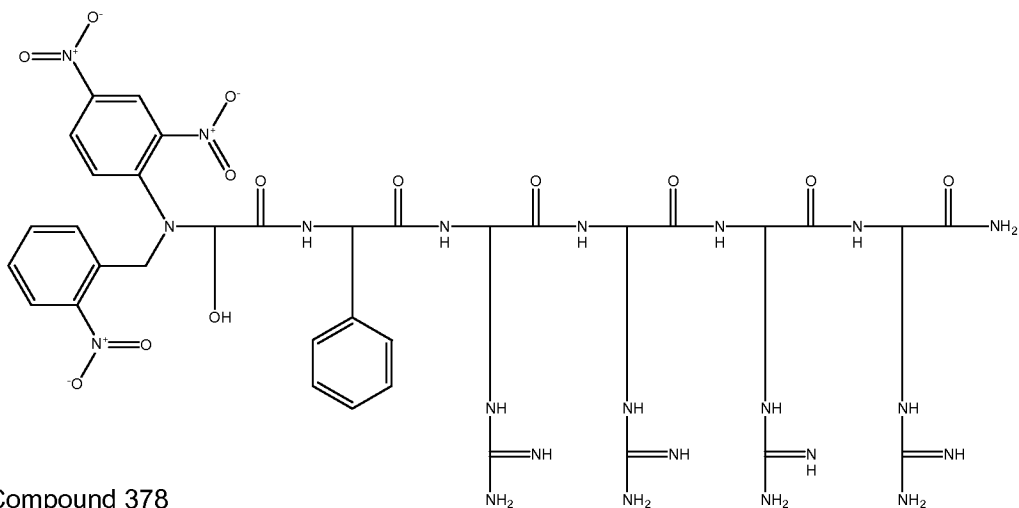
Compound 375



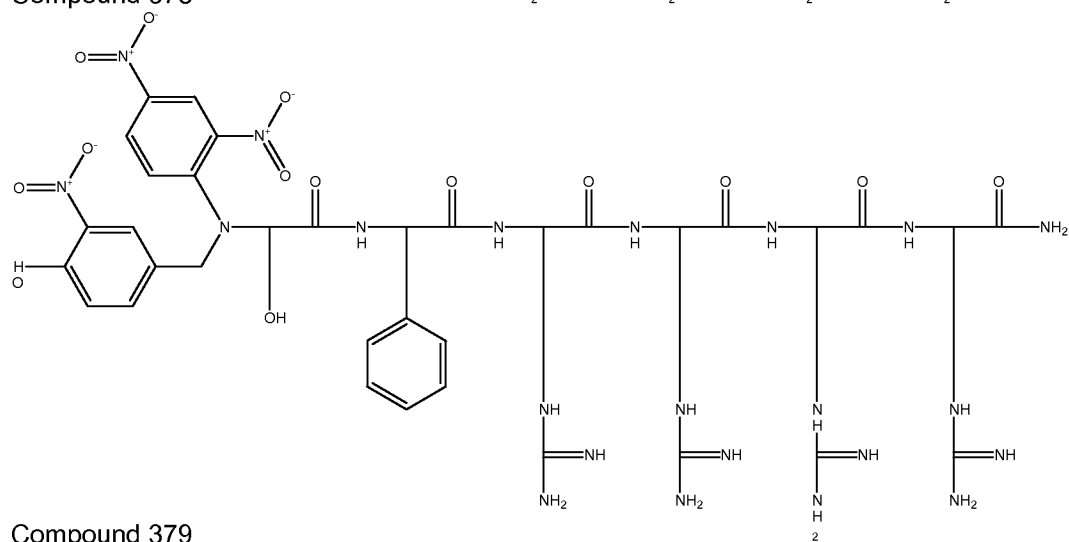
Compound 376



Compound 377

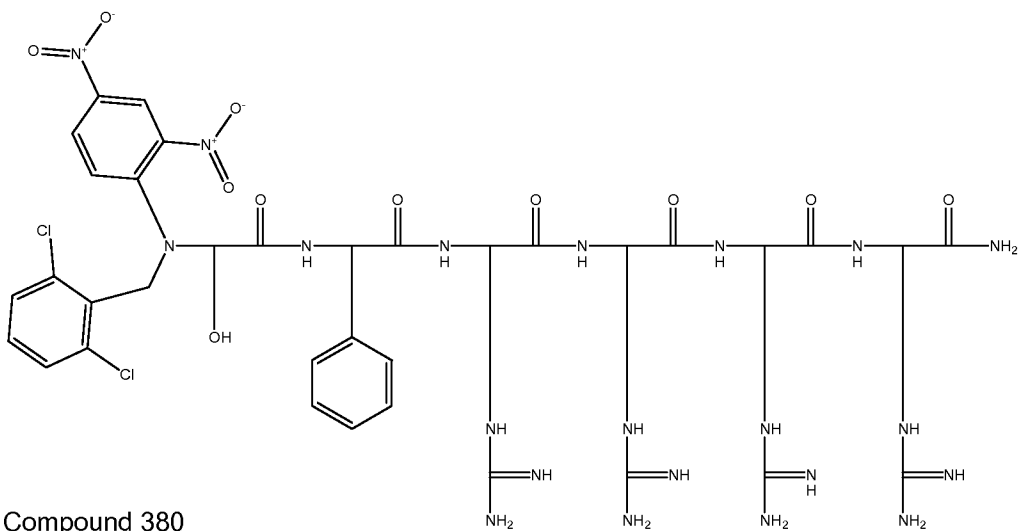


Compound 378

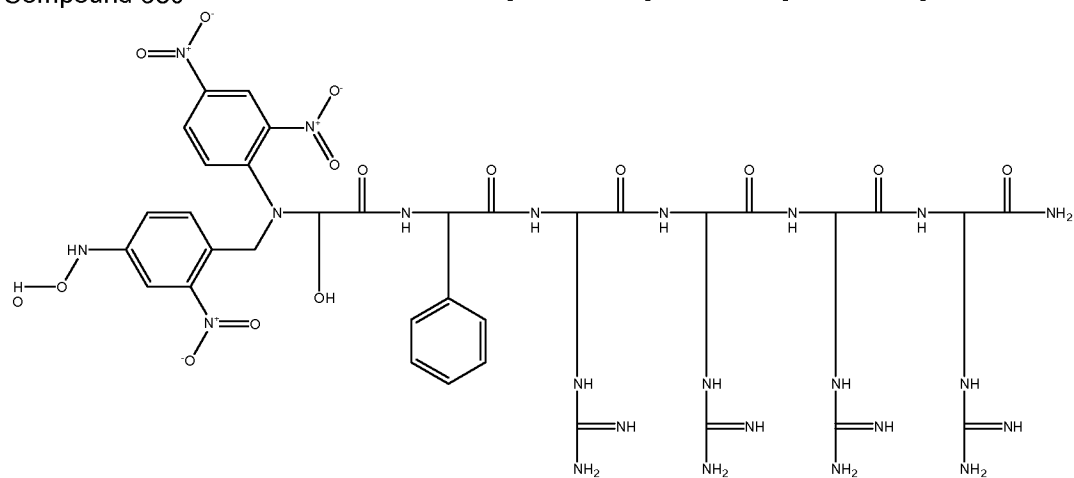


Compound 379

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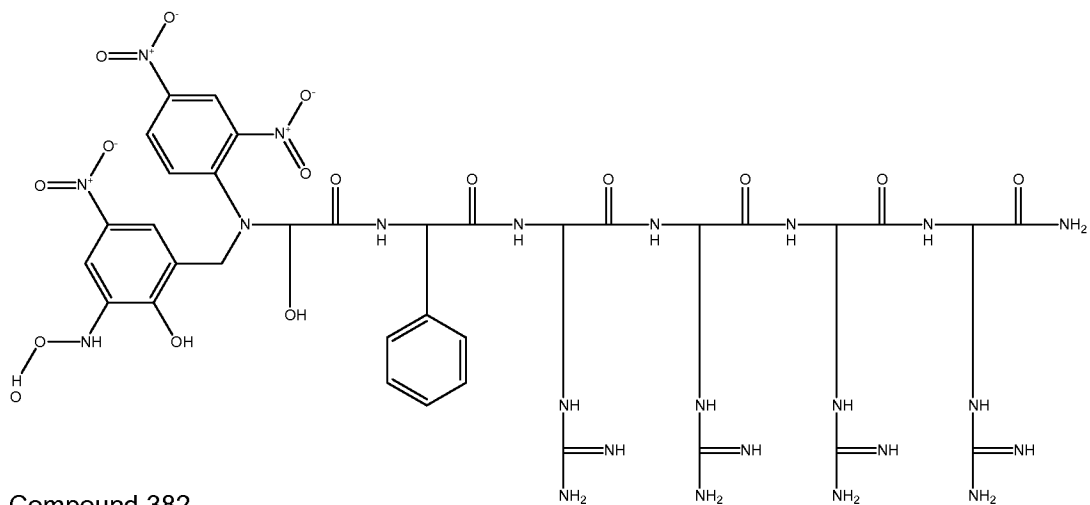


Compound 380

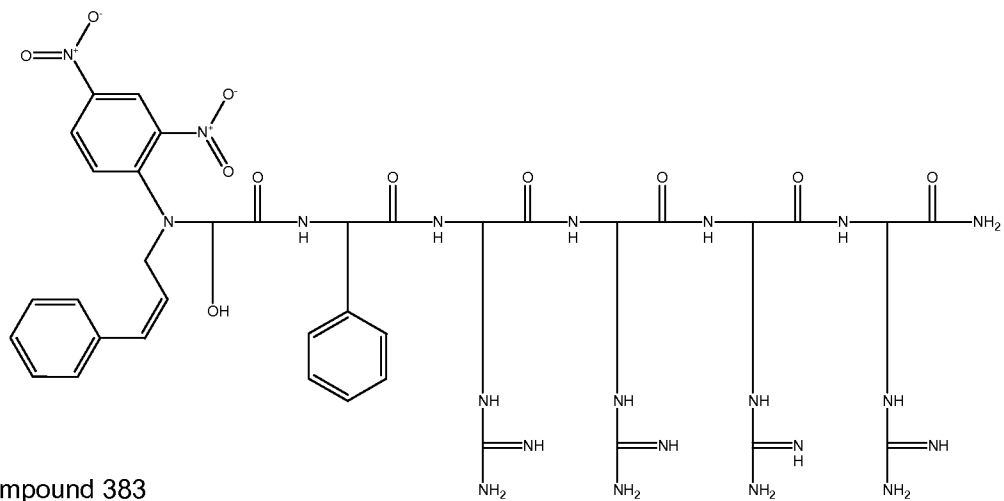


Compound 381

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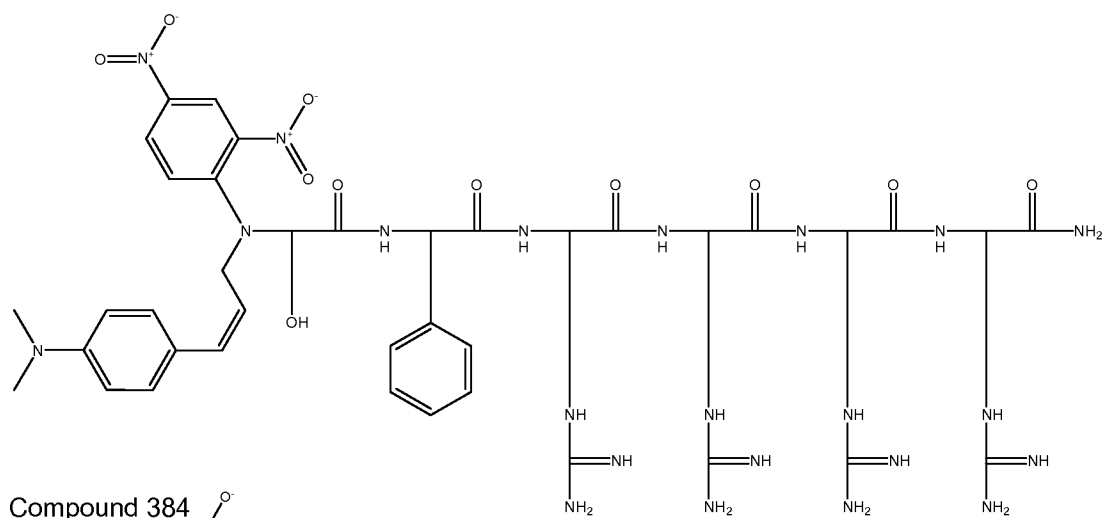


Compound 382

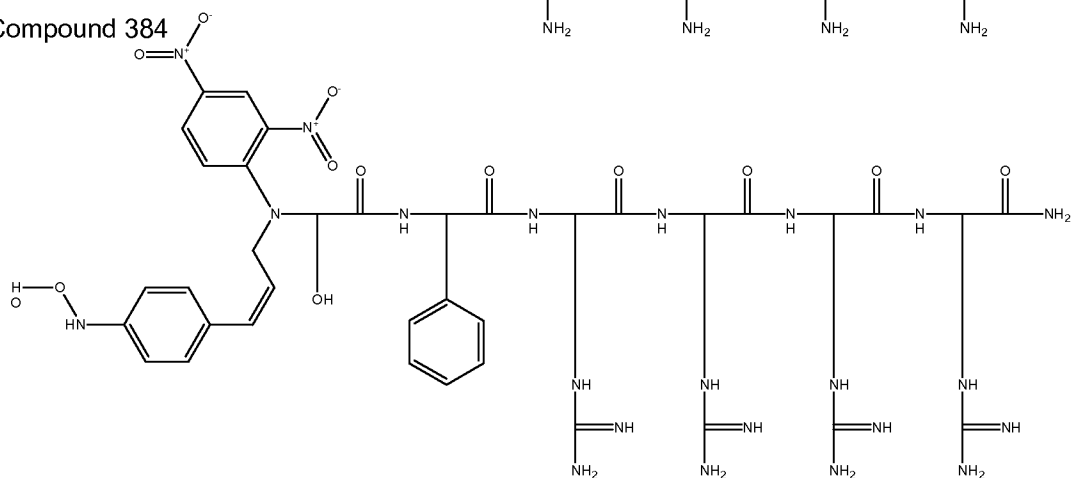


Compound 383

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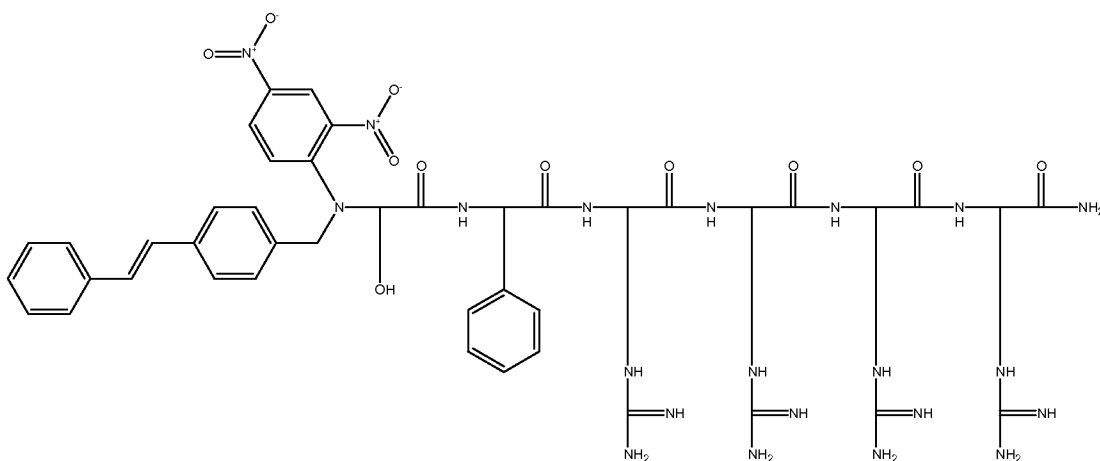


Compound 384

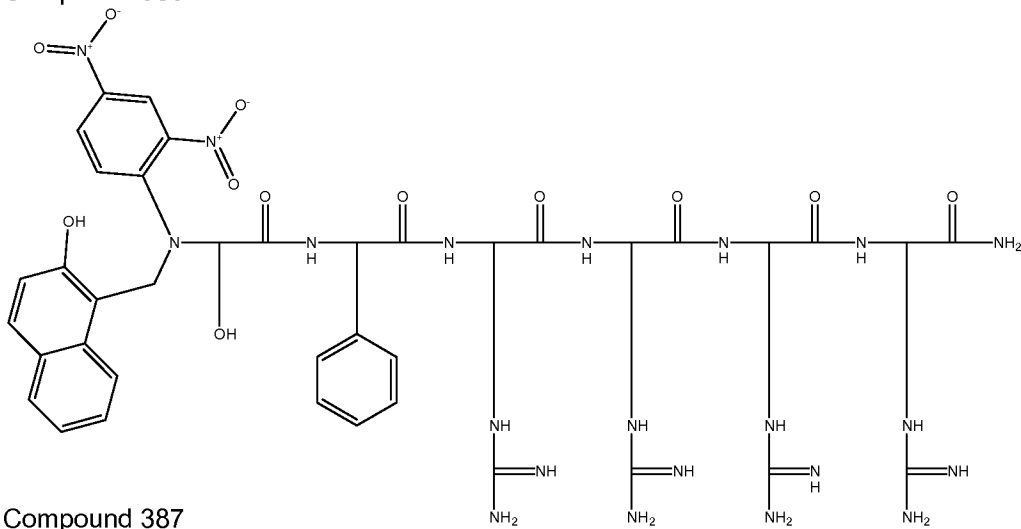


Compound 385

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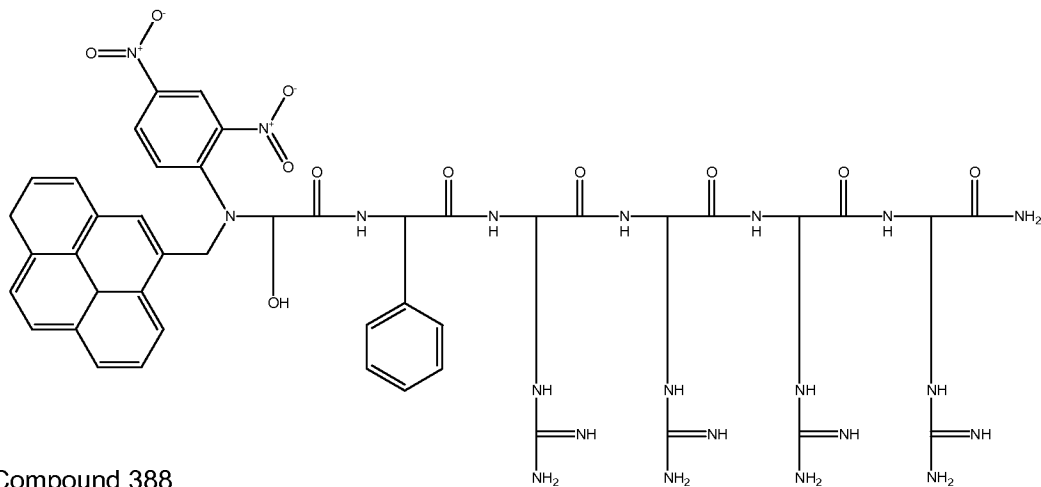


Compound 386

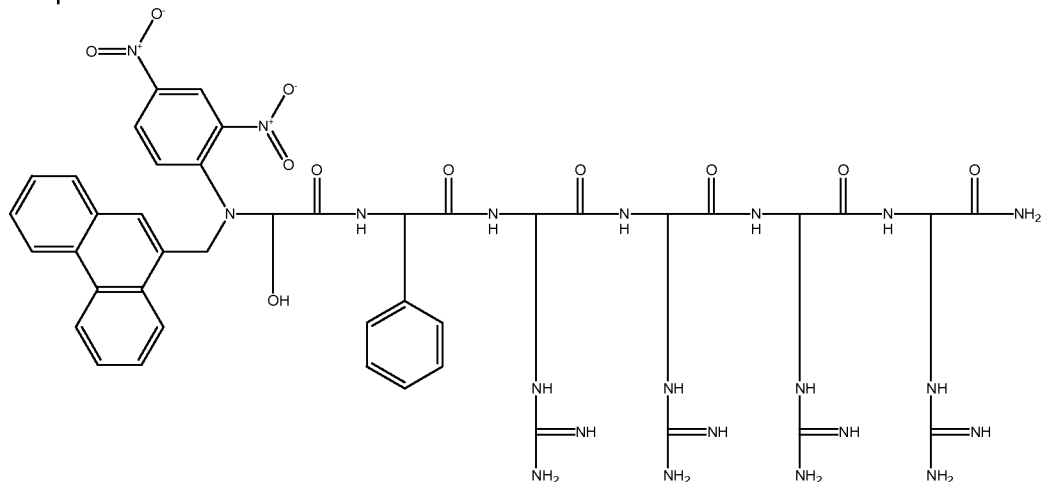


Compound 387

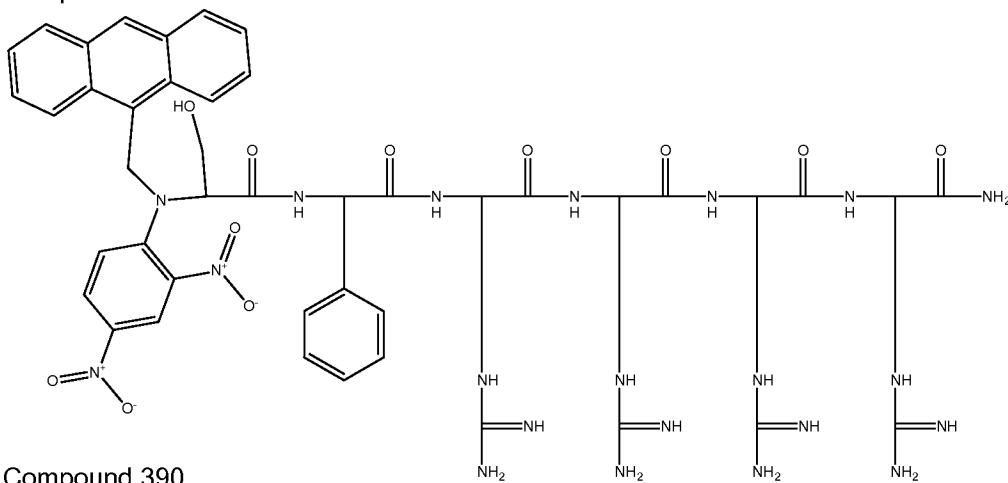
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Compound 388

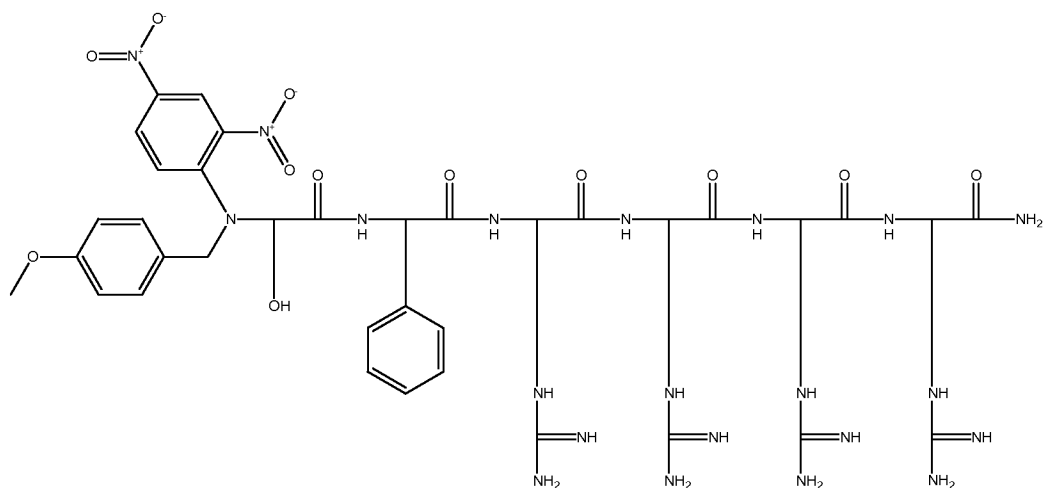


Compound 389

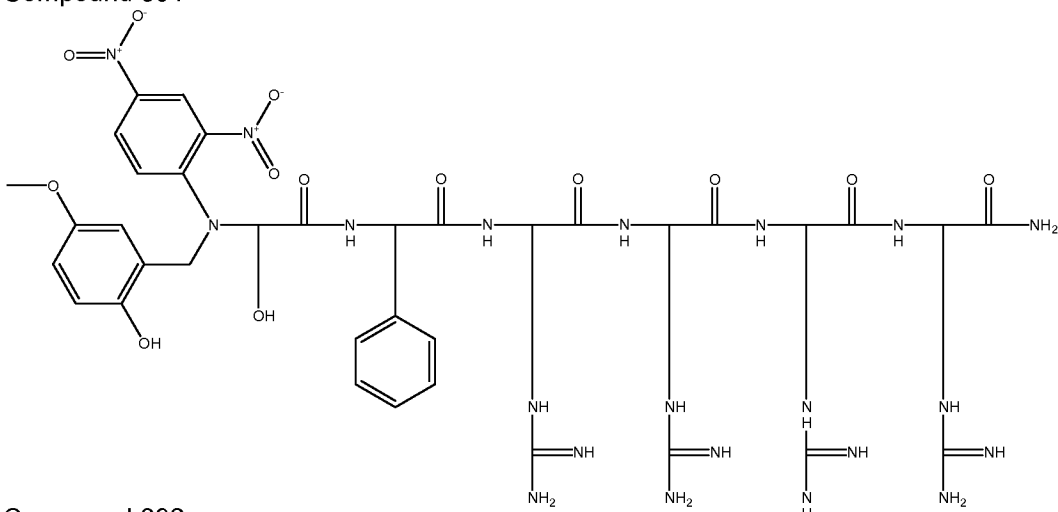


Compound 390

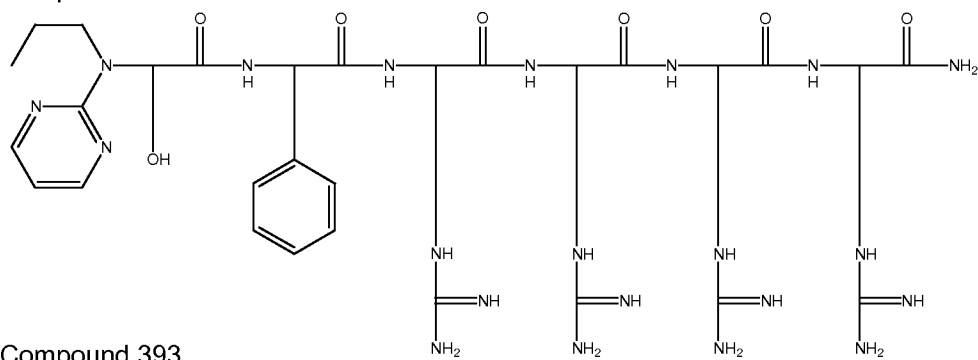
439227.1



Compound 391

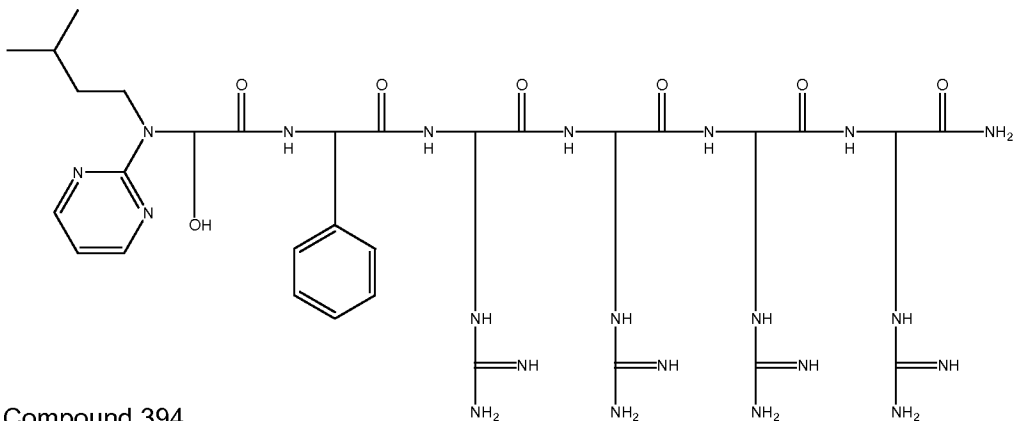


Compound 392

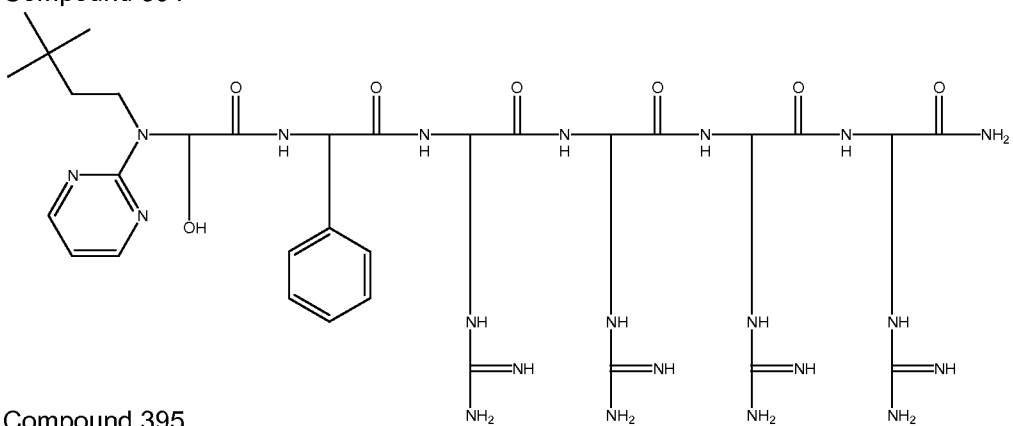


Compound 393

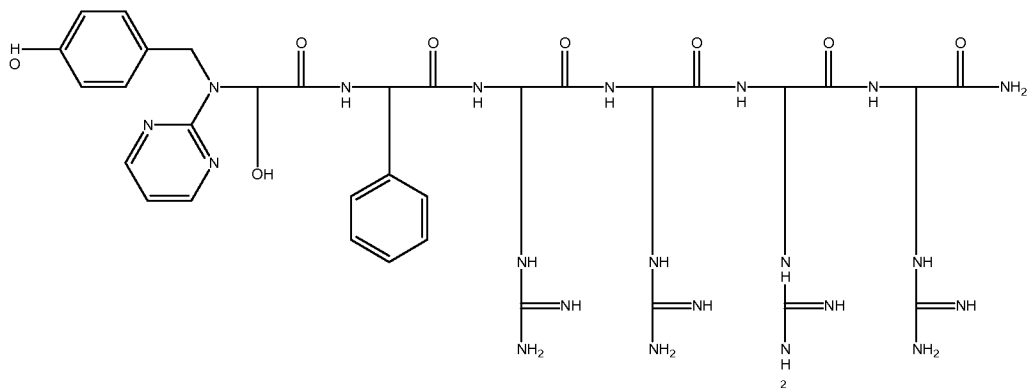
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Compound 394

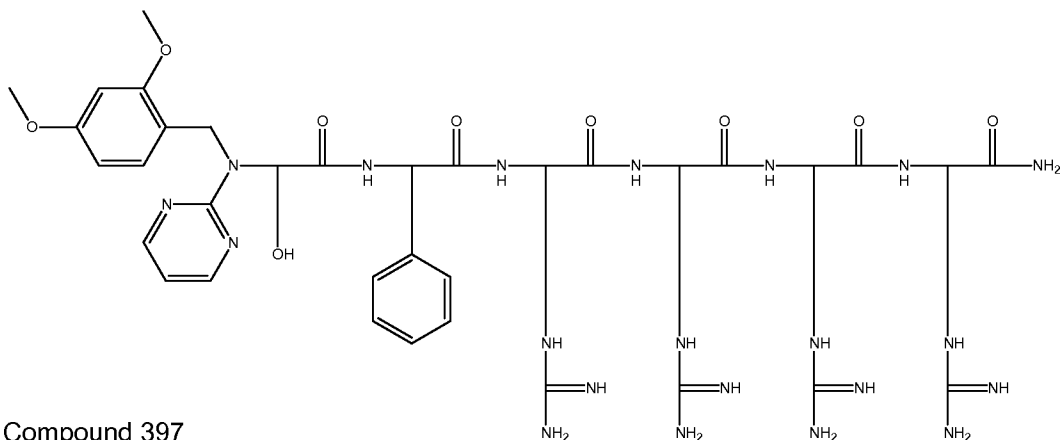


Compound 395

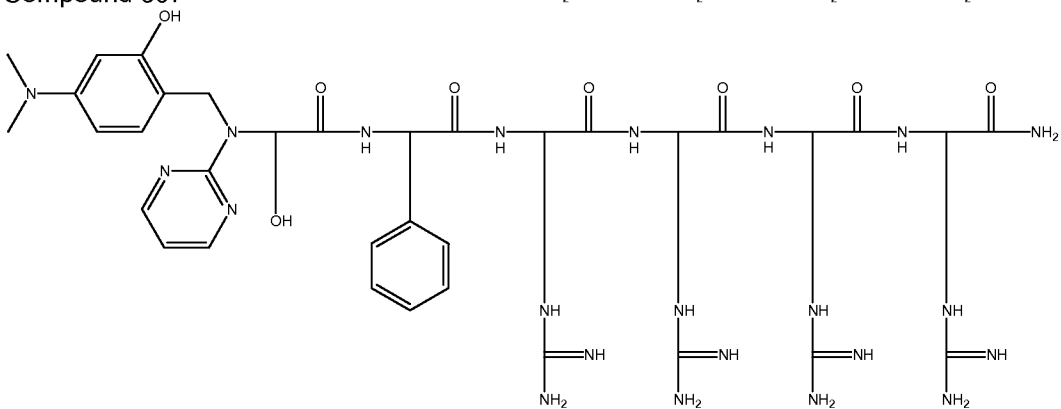


Compound 396

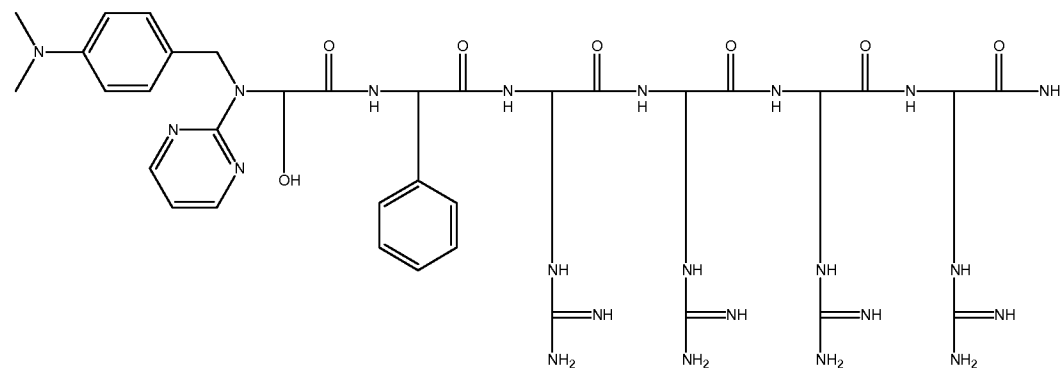
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Compound 397

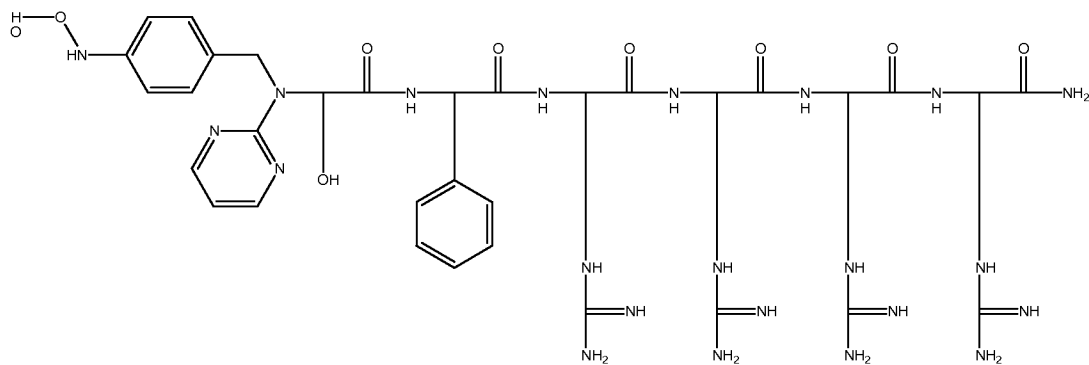


Compound 398

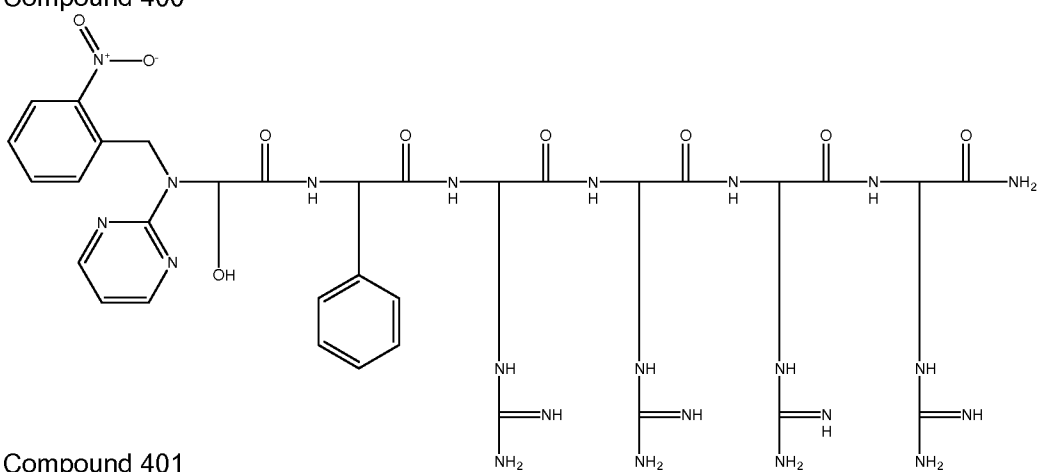


Compound 399

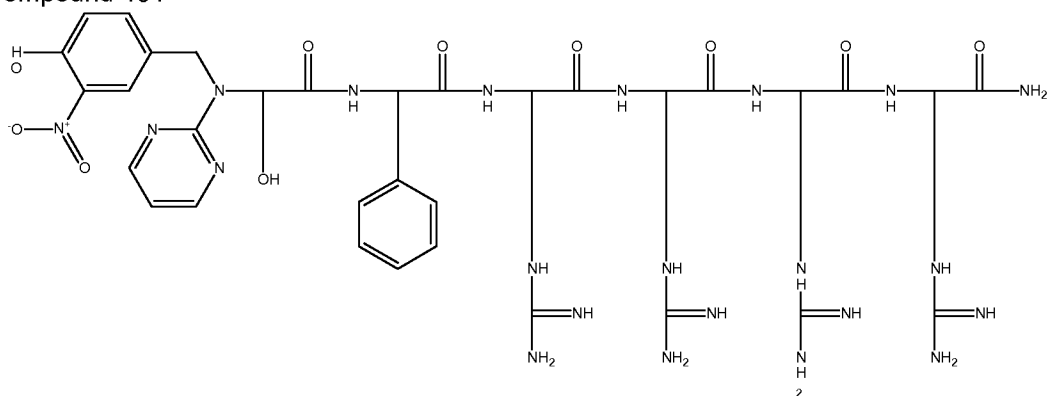
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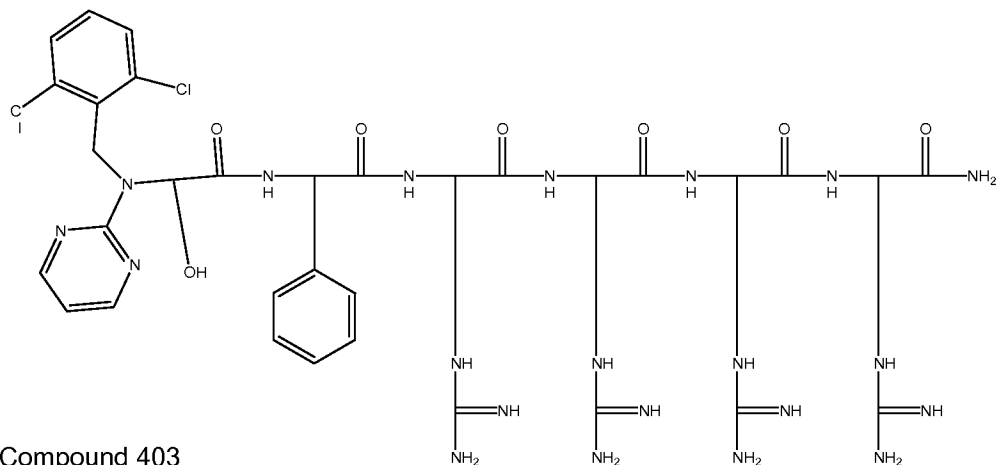
Compound 400



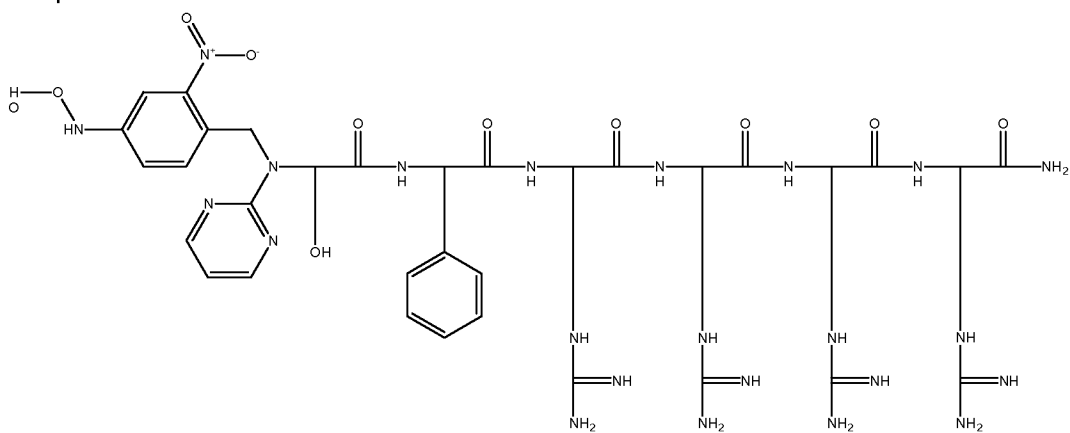
Compound 401



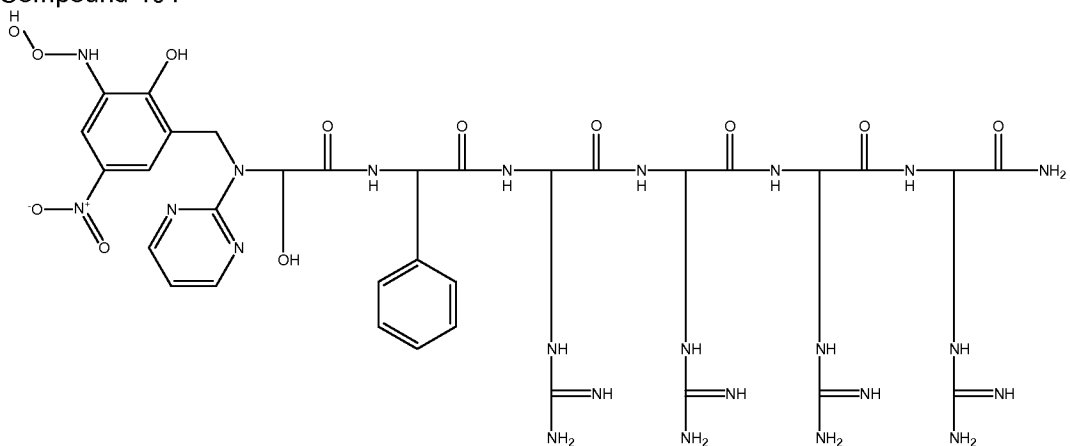
Compound 402



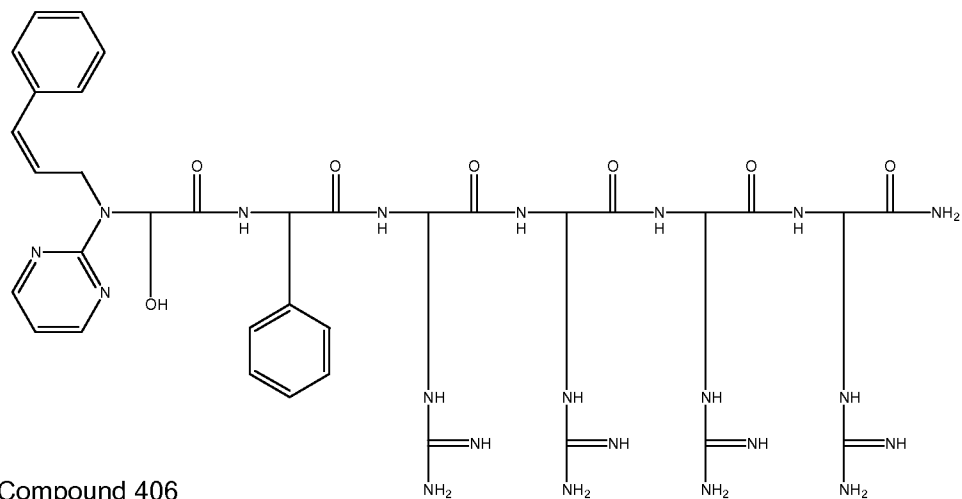
Compound 403



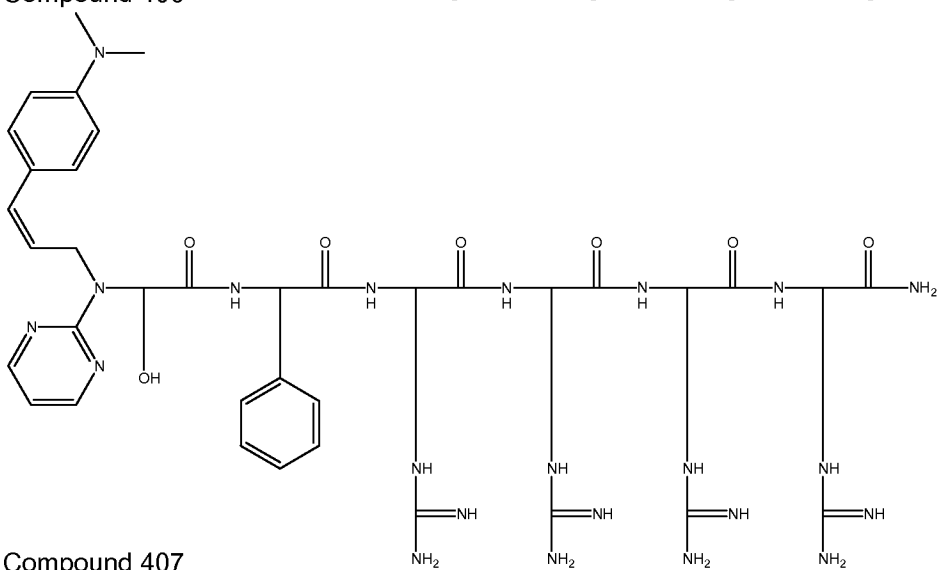
Compound 404



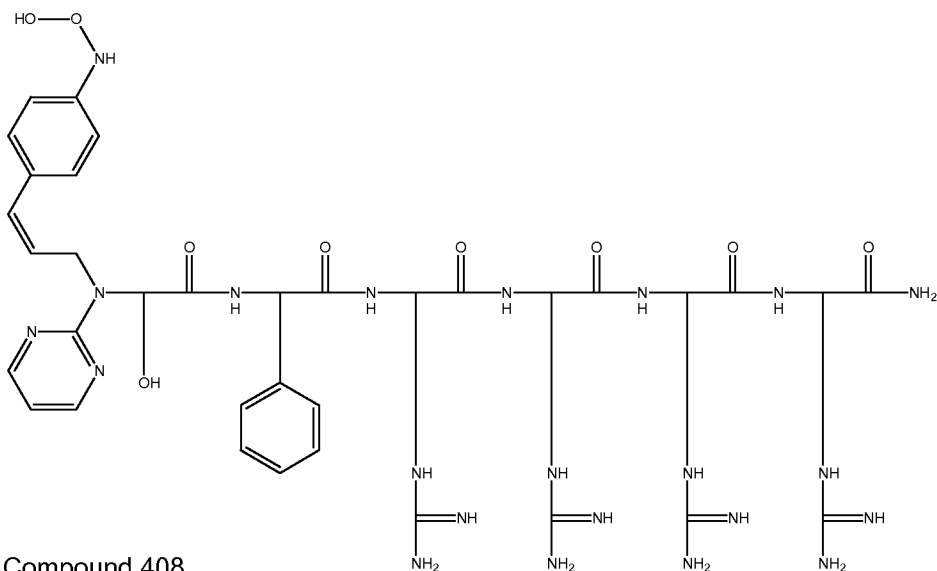
Compound 405



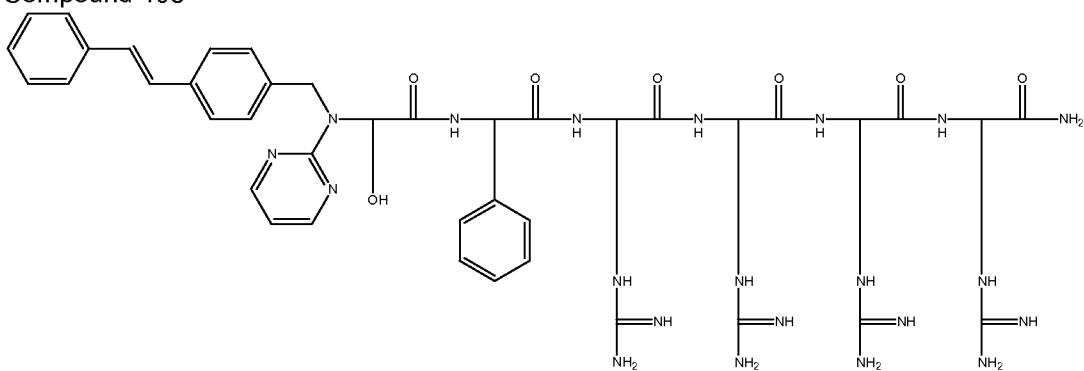
Compound 406



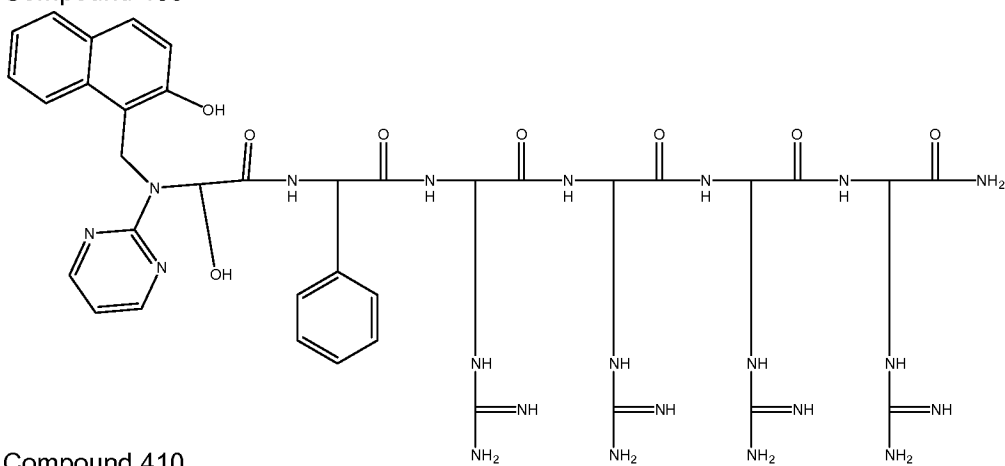
Compound 407



Compound 408

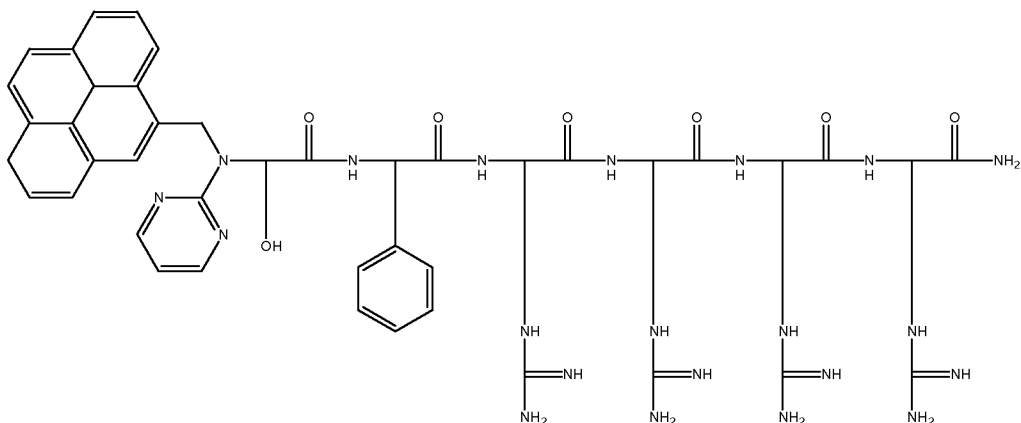


Compound 409

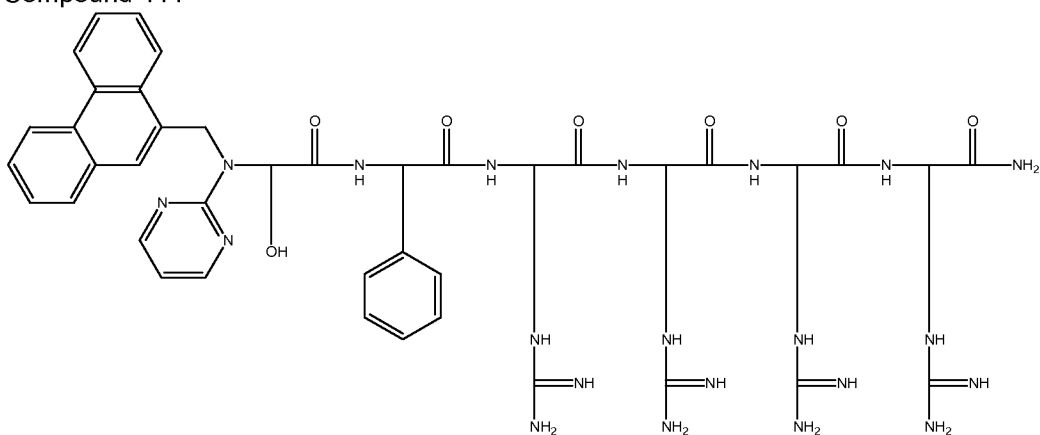


Compound 410

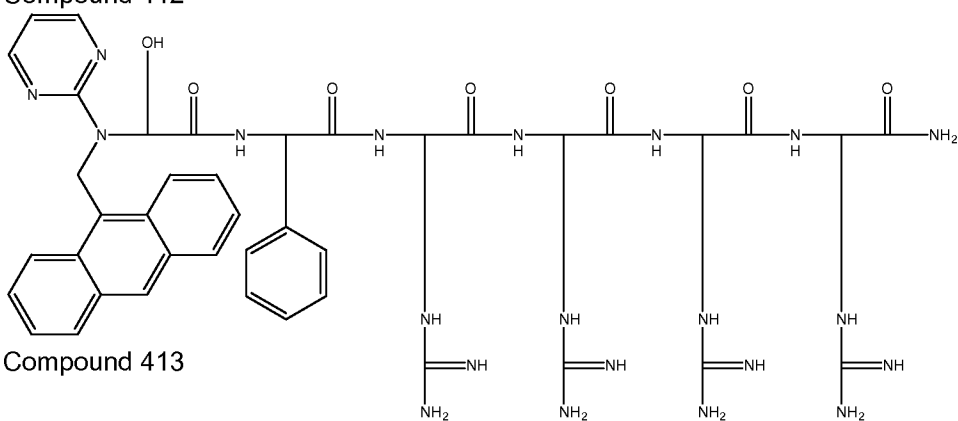
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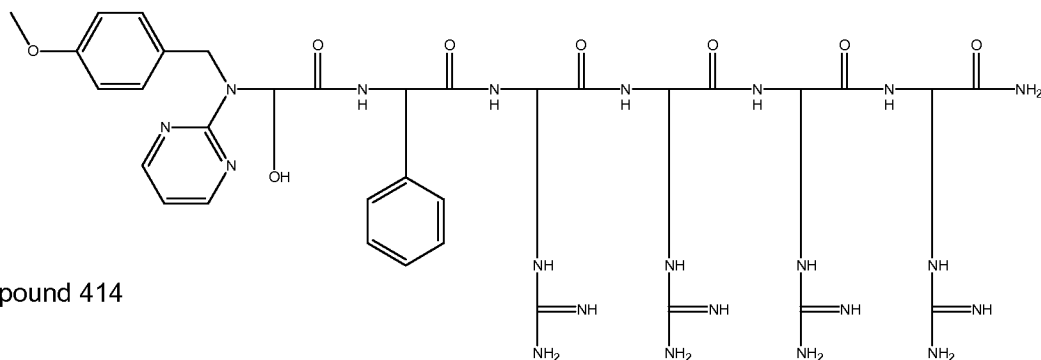
Compound 411



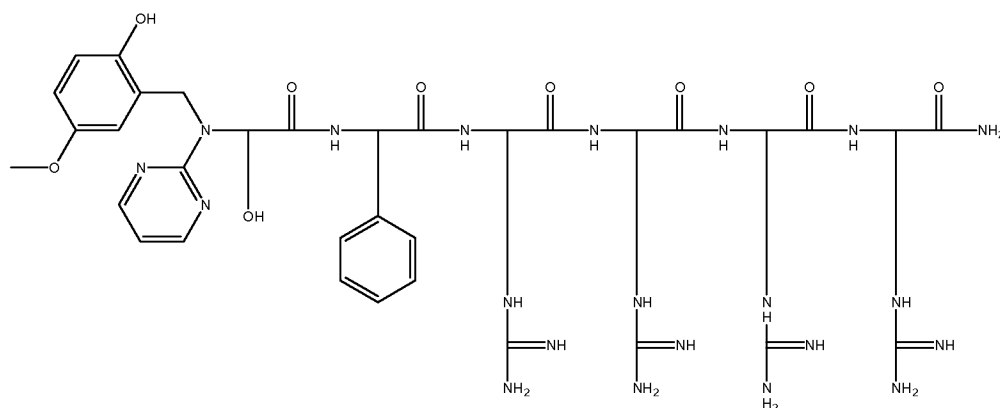
Compound 412



Compound 413



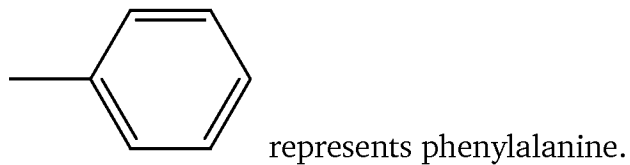
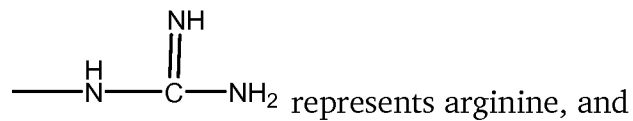
and



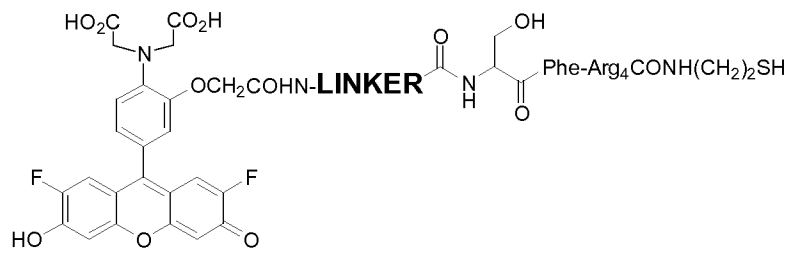
wherein amino acid chains are indicated as follows:

-OH represents serine,

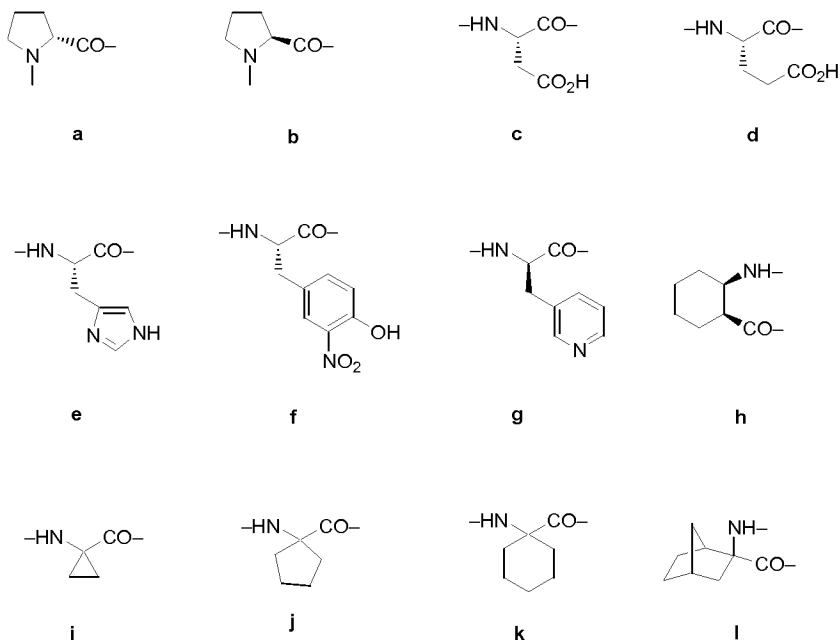
-NH₂ represents lysine,

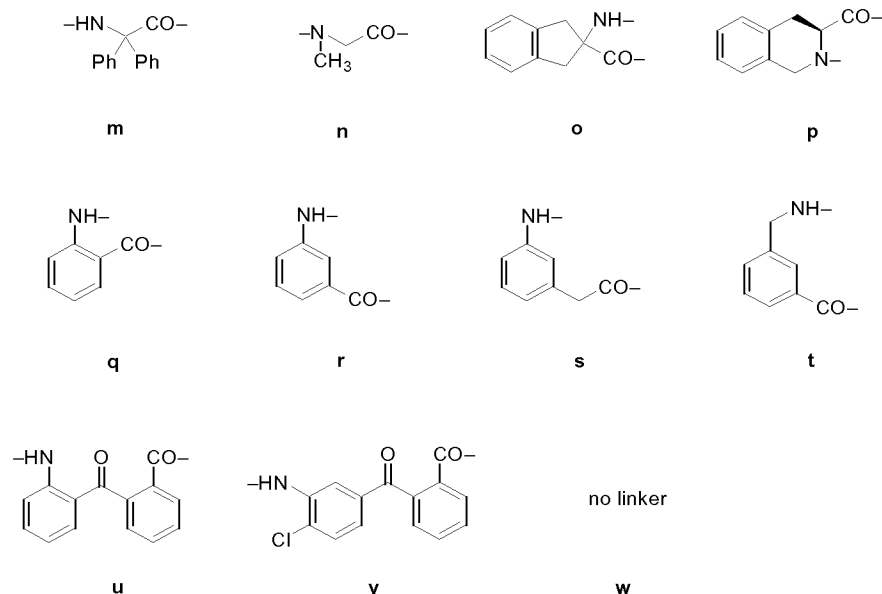


89. (Currently amended) A chemical compound comprising SEQ ID NO:1 having the structure:



wherein the LINKER is selected from the group consisting of the following:





90. (Previously presented) A chemical compound having the structure:

fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3);

wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine, and wherein the linker is selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

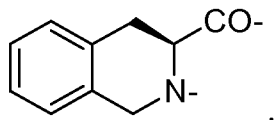
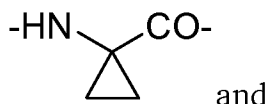
91. (Original) The chemical compound of claim 90, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

92. (Previously presented) The chemical compound of claim 90, wherein the fluorophore comprises a fluorescein group.

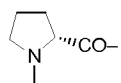
93. (Currently amended) The chemical compound of claim 90, wherein the fluorophore comprises a dansyl group, an acridine group, an Alexa Fluor® group, a BODIPY® group, an Oregon Green® group, a Rhodamine Green group, a Rhodamine Red-X group, a Texas Red® group, a Cascade Blue® group, a Cascade Yellow group, a Marina Blue® group, a Pacific Blue group, an AMCA-X group, or a coumarin group.

94-95. (Canceled)

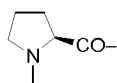
96. (Previously presented) A chemical compound having the structure:
fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3);
wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine, wherein the linker is selected from the group consisting of N-methyl glycine, L-proline, D-proline,



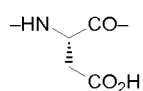
97. (Previously presented) A chemical compound having the structure:
fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3);
wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine, wherein the linker is selected from the group consisting of the following:



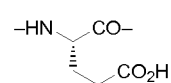
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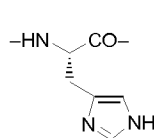
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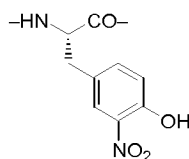
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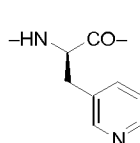
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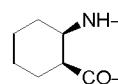
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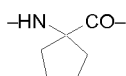
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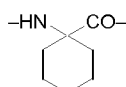
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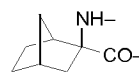
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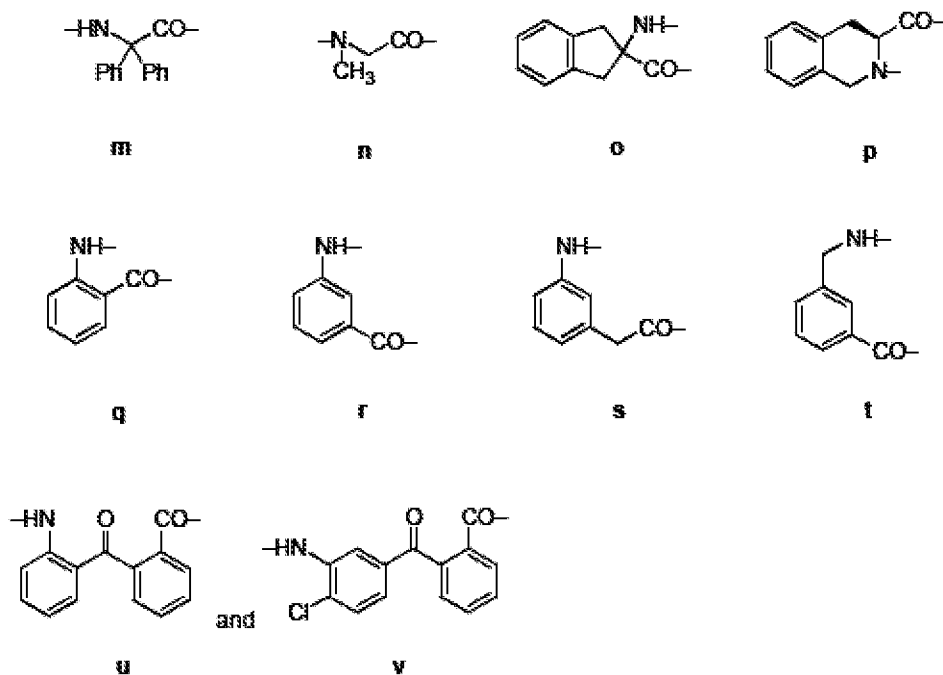
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98. (Currently amended) The chemical compound of claim 90, wherein the chemical compound is a substrate for a protein kinase or a precursor for a substrate for a protein kinase.

99. (Original) The chemical compound of claim 98, wherein the chemical compound is specific for protein kinase C.

100. (Original) The chemical compound of claim 99, wherein the chemical compound is specific for isoforms α , β , and γ of protein kinase C.

101. (Original) The chemical compound of claim 98, the chemical compound is

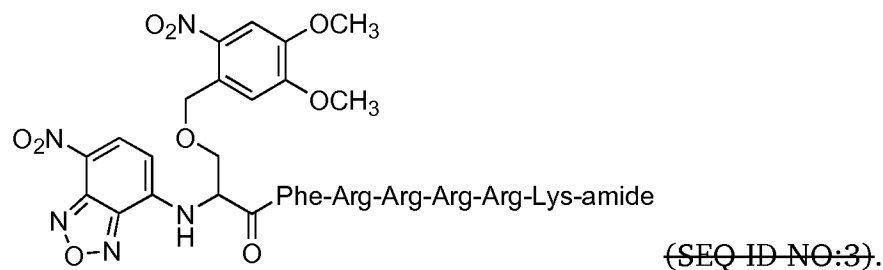
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specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca⁺/calmodulin-dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

102. (Original) The chemical compound of claim 90, wherein the chemical compound further comprises a carbohydrate, a lipid or a nucleic acid.

103-121. (Canceled)

122. (Currently amended) A chemical compound comprising SEQ ID NO:3 having the structure



123. (Previously presented) A composition comprising a chemical compound of claim 89, and a carrier.

124-126. (Canceled)

127. (Previously presented) The substrate of claim 60, wherein the substrate

comprises a metal ion chelator.

128. (Original) The substrate of claim 127, wherein the metal ion is a magnesium ion or a calcium ion.

129. (Previously presented) The chemical compound of claim 90, wherein a metal ion chelator induces a change in fluorescence intensity.

130. (Original) The chemical compound of claim 129, wherein the metal ion is a magnesium ion or a calcium ion.

131. (Original) The chemical compound of claim 129, wherein the change in fluorescence intensity is at least a 20% change in fluorescence intensity.

132. (Canceled)

133. (Previously presented) The chemical compound of claim 90, wherein the linker comprises a turn to position the fluorophore in a location closer to the serine, the threonine or the tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

134. (Previously presented) The chemical compound of claim 89, wherein the linker comprises a turn to position the fluorophore in a location closer to the terminal serine, the terminal threonine or the terminal tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

135-136. (Canceled)

137. (Previously presented) The composition of claim 123, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

138. (Previously presented) A composition comprising the substrate of claim 49, and a carrier.

139. (Previously presented) The composition of claim 138, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

140. (Previously presented) A composition comprising the compound of claim 88, and a carrier.

141. (Previously presented) The composition of claim 140, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

142. (Previously presented) A composition comprising the compound of claim 90, and a carrier.

143. (Previously presented) The composition of claim 142, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

144-145. (Canceled)

146. (Previously presented) A composition comprising the compound of claim 122, and a carrier.

147. (Previously presented) The composition of claim 146, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

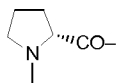
148. (Currently amended) ~~The substrate of claim 56,~~

A substrate for a protein kinase or a precursor of the substrate, wherein the substrate or the precursor comprises:

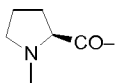
a peptide substrate for the protein kinase, wherein the peptide comprises a serine, a threonine, or a tyrosine on a terminal end of the peptide;

at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide;

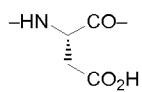
wherein the fluorophore is attached directly to the peptide or the fluorophore is attached to the peptide by a linker selected from the group consisting of



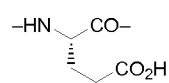
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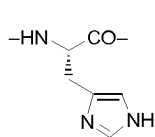
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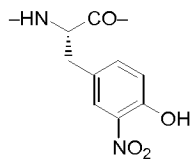
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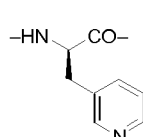
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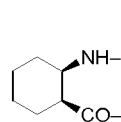
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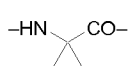
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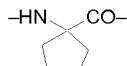
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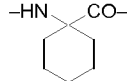
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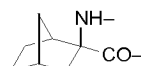
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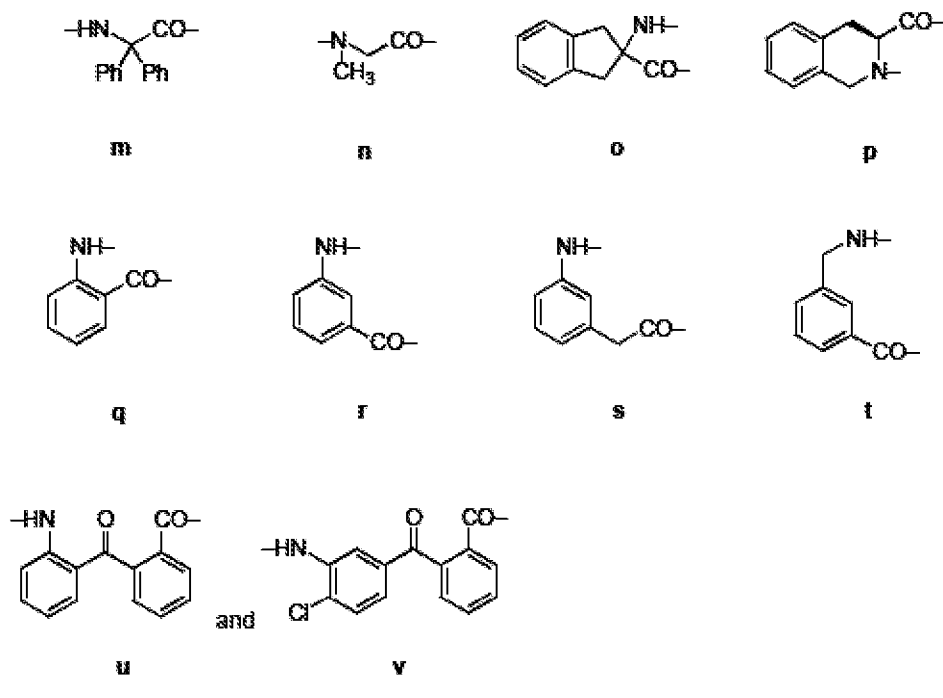
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wherein a photolabile side chain is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the substrate.

149. (Previously presented) A composition comprising the substrate of claim 83, and a carrier.

150. (Previously presented) The composition of claim 149, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically

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acceptable carrier.

151. (New) A composition comprising the precursor of a substrate for a protein kinase of claim 59, and a carrier.

152. (New) The composition of claim 151, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

153. (New) A composition comprising the substrate for a protein kinase or a precursor of the substrate of claim 148, and a carrier.

154. (New) The composition of claim 153, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.